THE FLAT BARK BEETLES OF FLORIDA (COLEOPTERA:SILVANIDAE, PASSANDRIDAE, LAEMOPHLOEIDAE)

By

MICHAEL CHARLES THOMAS

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Abstract of Dissertation Presented to the Graduate School
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THE FLAT BARK BEETLES OF FLORIDA (COLEOPTERA:SILVANIDAE, PASSANDRIDAE, LAEMOPHLOEIDAE)

By

MICHAEL CHARLES THOMAS

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Chairman: R.E. Woodruff
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The Florida species of the cucujoid families Silvanidae, Cucujidae, Passandridae, and Laemophloeidae are reviewed. Keys and illustrations for all Florida genera and species and diagnoses and detailed distribution records for all non-economic species in the state are provided. A key to the genera of the United States is also provided, as is an current checklist. There are 14 genera and 33 species of Silvanidae in the United States, 11 genera and 22 species of which occur in Florida. Of the two U.S. genera and four species of Cucujidae, none occur in Florida. Two genera and two species of Passandridae occur in the U.S., including Florida. The Laemophloeidae are represented by 14 genera and 53 species in the U.S., of which 11 genera and 31 species are recorded from Florida. Two new species of Cryptolestes and one of *Laemophloeus* are described. Newly recorded from Florida are the following species: *Nausibius sahlbergi* Grouvelle, *Eunausibius salutaris* Parsons, *Monanus concinnulus* (Walker), *Silvanus lewisi* Reitter, *S. proximus* Grouvelle, *Laemophloeus suturalis* Reitter, *Charaphloeus adustus* (LeConte), *Charaphloeus convexulus* (LeConte), *Parandrita permixtus* (Grouvelle), and *Rhabdophloeus horni* (Casey). New combinations proposed are: *Charaphloeus bituberculatus* (Reitter) (from *Laemophloeus*); *Charaphloeus flavosignatus* (Schaeffer) (from *Laemophloeus*); *Parandrita permixtus* (Grouvelle) (from *Laemophloeus*); *Phloeolaemus chamaeropis* (Schwarz) (from *Laemophloeus*); *Rhabdophloeus horni* (Casey) (from *Cryptolestes*); *Rhabdophloeus disseptus* (Casey) (from *Cryptolestes*). *Charaphloeus* Casey and *Phloeolaemus* Casey are elevated from subgenera of *Laemophloeus* to full generic rank. *Cryptolestes uncicornis* (Reitter) is revived from synonymy under *C. punctatus* (LeConte). New synonyms proposed are: *Cathartosilvanus opaculus* (LeConte) = *C. trivialis* (Grouvelle); *Laemophloeus megacephalus* Grouvelle = *L. floridanus* Casey; *Charaphloeus convexulus* (LeConte) = *C. filiger* Casey and *C. sphaerops* Casey; *Charaphloeus adustus* (LeConte) = *C. fraterculus* Casey; *Cryptolestes uncicornis* (Reitter) = *C. quadratus* (Casey); *Cryptolestes punctatus* (LeConte) = *C. adumbratus* Casey and *C. extricatus* Casey; *Lathropus pictus* Schwarz = *L.*

costatus Grouvelle. Lectotypes are designated for *Laemophloeus quadratus* Casey, *Cryptolestes adumbratus* Casey, *Cryptolestes extricatus* Casey, and *Laemophloeus megacephalus* Grouvelle.

INTRODUCTION

The flat bark beetles are a diverse group of taxa traditionally included in the family Cucujidae, but recently considered to belong to three or four separate families. They are ubiquitous under the bark of dead deciduous, and to a lesser extent, evergreen trees and logs. Most species appear to be fungivorous, feeding primarily on ascomycete fungi. However, some species are found only in the galleries of Scolytidae and may be an important, but little studied, element in the natural control of bark beetles.

Like other members of the series Cucujiformia, the flat bark beetles possess cryptonephritic Malpighian tubules, making them well-adapted to relatively dry babitats and preadapting them to life in stored products. Indeed, several species are among the most destructive of stored products pests and have been distributed throughout the world by commerce.

Although the biology and taxonomy of the economically important species are reasonably well-known, the same cannot be said for other U.S. flat bark beetles. Many, if not most, museum specimens are either not identified or misidentified, and the only current identification keys deal strictly with the stored products species. As Arnett (1962:776) concluded, "The group is badly in need of study at all levels." Because of this, I have included a checklist of described United States species assigned to their proper genus, and a key to the adults of genera known to occur in the United States. Of the 32 genera and 92 species of these families known to occur in the United States, 24 genera (75 percent) and 55 species (60 percent) occur in Florida, so that the keys permit the identification of the majority of the species in the United States.

The importance of knowing the taxonomy and biology of apparently non-economic species is illustrated by two recent examples: *Oryzaephilus acuminatus* Halstead was described in 1980 from specimens from India and Sri Lanka and from coconut shells imported into Great Britain (Halstead 1980). A year later, Jacob (1981) discussed the species′ potential as a stored products pest. Three years later, Thomas and Woodruff (1984) recorded the importation of *O. acuminatus* into Florida from India. *Cryptolestes klapperichi* Lefkovitch wss described from Afghanistan in 1962 (Lefkovitch 1962a); was recorded from Arabia in 1965 (Lefkovitch 1965b), and was reported to be a stored products pest in Sri Lanka and Malaysia (Green 1979). It is here reported from the New World for the first time, based on specimens collected in the wild in the U.S. Virgin Islands, and it is apparently actively expanding its range, probably through the agency of commerce.

The only published list of flat bark beetles from Florida is that of Schwarz (1878), who recorded 13 species of the families treated in the present work. Fifty-five species are included in this study, including economic species which may not be established in the state but which have been, or are likely to be, recorded from Florida. Economic species (especially those of Cryptolestes and Oryzaephilus) which do not occur, or very rarely occur, in the wild, are keyed and illustrated but are otherwise not considered in detail. The taxonomic and biological literature on such species is voluminous.

Although larval diagnoses are presented for each family, this work is predominantly concerned with the identification and taxonomy of adults. Statements about specimens refer to adults unless otherwise stated to refer to other stadia.

This study is based on more than 2,000 specimens collected in Florida, deposited primarily in the Florida State Collection of Arthropods (FSCA), Gainesville, and in my personal collection (MCTC), plus more than a thousand specimens from outside the state. Collection data for all Florida specimens examined for this study are listed in the Appendix. Types and other specimens were also examined from the United States National Museum of Natural History, Washington, D.C. (USNM), Field Museum of Natural History, Chicago (FMNH), California Academy of Sciences, San

Francisco (CASC), British Museum (Natural History), London (BMNH), Museum National d'Histoire Naturelle, Paris (MNHN), Canadian National Collection, Ottawa (CNC), and Polish Academy of Science, Warsaw (PASC).

With the increasing interest in habitat protection as a method of environmental preservation, the distribution records compiled during this study pinpoint those areas in which isolated populations of West Indian species continue to exist, and which face imminent threat of extinction from the continued urbanization of southern Florida. Several of these species may very well be useful as indicator species of especially fragile habitats.

Woodruff (1973:x) noted that "Florida is an ideal state for faunal studies because it is a peninsula and is delimited on three sides. It is an important area from a zoogeographic standpoint because of the proximity of the West Indies and because of the high percentage of endemic species."

Although this is intended primarily as a faunal study, the taxonomy of these groups is such that numerous taxonomic and nomenclatural changes have been necessary. To prevent possible nomenclatural problems, the three new species described in this work are not named. Recent revisions to the International Code of Zoological Nomenclature (Anonymous 1985) restrict publication within the meaning of the Code to works reproduced by ink on paper (Article 8c) and permit authors to include a disclaimer that the work is issued for the permanent scientific record (Article 8b). To prevent problems from other nomenclatural changes made in this dissertation, I here make that disclaimer.

MATERIALS AND METHODS

Flat bark beetles are more abundant in nature than their representation in museum collections suggests, but because of their usually minute size and retiring habits they do not often come to the attention of the general collector. Their small size also necessitates special preparation in order to accurately observe their external skeletal structure and genitalia.

Ultraviolet light-trapping, particularly in areas with much dead wood, is especially productive and is the method by which the majority of specimens for this study were obtained. It is the most efficient method for gathering basic data on the spatial and temporal distribution of the adults. However, it reveals little information on their habits and habitats.

In Florida, where my collecting experience has been confined, most flat bark beetles can be found under the bark of hardwood trees and logs, especially the various oaks, _Quercus_ spp. The stage of decay and physical location of the log (e.g., whether it is located in the sun or shade, whether it is contact with the ground, or is above the ground) are important factors in determining the abdundance of flat bark beetles and, probably, the composition of taxa present. A few species (e.g., _Phloeolaemus_ _chamaeropis_

(Schwarz)) are most abundant on freshly downed wood, but most laemophloeines and silvanines can be found most abundantly on logs that have been down long enough for the bark to crack and ascomycete fungi to separate the thin outer bark from the thick, corky layer of inner bark. It is within these pockets of loose outer bark that many flat bark beetles can be collected (as well as colydiids, rhizophagids, nitidulids, mycetophagids, and corylophids). (The fruiting bodies of ascomycete fungi are flat, black or grey structures that look like splotches of tar and not at all like the fleshy fungi with which most collectors are familiar.) Flat bark beetles can also be found, although less abundantly, in the space between the inner bark and the sapwood on older, well-seasoned logs. Moist-rotten logs rarely produce many specimens of flat bark beetles.

Most general entomology textbooks recommend a stout knife or screwdriver for prying bark. I have found the best tool for this task is a pry bar, available in many hardware stores. This resembles a miniature crowbar but is fashioned from a flat bar of tempered steel. Both ends are sharpened and it can be used for chopping as well as prying. A small pocket knife is useful for separating the thin outer bark from the inner bark. An aspirator is essential, since these beetles tend to scurry rapidly into crevices and under attached bark when they are exposed, and are much too small for rapid hand-collecting.

I have also collected specimens by beating dead branches and by placing leaf debris in a modified Berlese funnel. The latter method produces some silvanines, but few other flat bark beetles. I have seen specimens of several species that were collected in vane traps baited with ethanol. This is a potentially productive collecting procedure that should be investigated in greater detail.

Flat bark beetles can be killed in a standard killing jar or in a vial of 70-75 percent isopropyl alcohol. Ethanol probably should not be used since it seems to cause the soft tissues of the body to harden and makes the clearing of specimens difficult.

Most specimens can be glued to standard points, but representative specimens should be mounted on microscope slides. The following procedure has given me good results: clear the specimen by boiling in a dilute (approximately 10 percent by weight) solution of potassium hydroxide (KOH) or sodium hydroxide (NaOH). I use a small glass crucible and an alcohol lamp, but a small beaker and hot plate would work as well. Once the soft tissues have cleared (the specimen will appear transparent but not colorless), rinse the specimen in distilled water or a weak solution of acetic acid (vinegar will do). Using fine pins or needles under a dissecting microscope, dissect away the abdomen, and separate the tergum from the sternum. The genitalia will come away with the tergum. The mouthparts can be removed by placing the point of the pin firmly against the mentum and pulling anteriorly; this will usually separate all of the mouthparts from the head capsule except for the mandibles, which can then be pulled away with forceps or the tip of the pin. To better observe the structure of the pro- and mesocoxal cavities, the legs on one side of the body should also be removed. If the body is heavily pigmented, it may be bleached in a 3 percent solution of hydrogen peroxide.

Body, genitalia, and mouthparts should be mounted under separate cover slips. I use Hoyer's solution as a mounting medium so that specimens can be mounted directly from water or alcohol; for greater permanence balsam may be used, but requires time-consuming dehydration of specimens. Using 12mm diameter cover slips, three mounts may be made on the same slide, thus keeping the different parts of the specimen together.

Larvae are often present in the same habitat as the adults and should be collected and kept associated with the adults. I use KAAD (1 part kerosene, 7 to 10 parts 95 percent ethanol, 2 parts glacial acetic acid, 1 part dioxane (Peterson 1962:7)) larval fixative for killing larvae; specimens are then stored in vials of 70 percent isopropyl alcohol or are slide-mounted. Rearing larvae in Petri dishes or snap-cap plastic vials with bits of fungus-covered bark is relatively simple and would provide much needed information on the immature stages of these beetles. The larvae of most species, and even many Nearctic, genera are unknown.

A representative of at least one species is illustrated for each genus; it should be possible to identify many specimens to genus by reference to the illustrations. The illustrations were prepared using a binocular dissecting microscope equipped with an eyepiece scale. Specimen dimensions were measured at either 15x or 30x. The measurements were transferred to graph paper, and a preliminary pencil sketch made. After transferring the pencil sketch, the drawing was inked and then shaded by one of the following techniques: stippling, scratch board, or coquille board.

CHECKLIST OF FLAT BARK BEETLES FOR AMERICA NORTH OF MEXICO

(Note: Species marked with an asterisk are present in or, in the case of economic species, are likely to be found in Florida. Where species are now assigned to a genus other than the one in which they were originally placed the original assignment is indicated in parenthesis after the species name.)

SILVANIDAE
Uleiotinae

Uleiotini

Uleiota Latreille 1796:46
Brontes Fabricius 1801:97
Hyliota Reitter 1880:80
debilis LeConte 1856:76 (*Brontes*)
dubius Fabricius 1801:97 (*Brontes*)
truncatus Motschulsky 1845:92

Dendrophagus Schonherr 1809:50
cygnaei Mannerheim 1846:515
americanus Mannerheim 1853:207
glaber LeConte 1850:223
?*germari* Mannerheim 1843:306

Telephanini

Cryptamorpha Wollaston 1854:156
Pseudophanus LeConte 1860:84
* *desjardinsi* Guérin-Méneville 1829-44:196 (*Psammoecus*)
hubbardi Casey 1884:167 (*Psammoecus*)
musae Wollaston 1854:157
signatus LeConte 1860:85 (*Pseudophanus*)

Telephanus Erichson 1846:329
Heterodromia Haldeman 1848:127
lecontei Casey 1884:103
* *velox* Haldeman 1848:127

Silvaninae

- Nausibius Redtenbacher 1858:998
  - * clavicornis Kugelann 1794:511 (Cucujus)
    - dentatus Marsham 1802:108 (Coricaria)
    - denticulatus Macleay 1825:46 (Sylvanus)
    - intermedius Smith 1851:16 (Silvanus)
    - latus Fairmaire 1850:53 (Silvanus)
    - parallelus Walker 1858:206 (Rhizophagus)
  - * major Zimmermann 1869:257
    - dentatus var. major, Crotch 1873:44
  - * repandus LeConte 1866:70
  - * sahlbergi Grouvelle 1896:206

- Eunausibius Grouvelle 1912a:314
  - * salutaris Parsons 1974:182

- Oryzaephilus Ganglbauer 1899:584
  - * mercator Fauvel 1889:132 (Silvanus)
    - gossypi Chittenden 1897:12 (Silvanus)
  - * surinamensis Linnaeus 1758:357 (Dermestes)
    - bicornis Erichson 1846:337 (Silvanus)
    - frumentarius Fabricius 1775:62 (Anobium)
    - cursor Fabricius 1792:96 (Tenebrio)
    - sexdentatus Herbst 1783:31 (Ips)
    - sexdentatus Fabricius 1792:232 (Dermestes)
  - * acuminatus Halstead 1980:309

- Silvanus Latreille 1804:158
  - bidentatus Fabricius 1792:233 (Dermestes)
    - sulcatum Fabricius 1792:555 (Colydium)
    - affinis Reitter 1876:58
  - * lewisi Reitter 1876:57
  - * muticus Sharp 1899:560
  - nitidulus LeConte 1856:78
  - * planatus Germar 1824:466
    - zimmermanni Guérin-Méneville 1829-44:198
    - cognatus LeConte 1856:77
  - * proximus Grouvelle 1904:183
    - amabilis Grouvelle 1914:140
  - * recticollis Reitter 1876:61
    - ?Leucohimatium breve Wollaston 1873-74:170
    - reflexus Reitter 1880:25
    - vitulus Grouvelle 1882:294
    - pumilus Grouvelle 1912a:332
    - minimus Grouvelle 1912a:334
  - unidentatus Olivier 1790:9 (Ips)
    - planum Herbst 1797:285 (Colydium)
    - gratiosus Motschulsky 1863:501
    - siculus Stierlin 1864:147

Pensus Halstead 1973:77
gilae Casey 1884:72 (*Silvanus*)

Cathartosilvanus Grouvelle 1912a:340
* *imbellis* LeConte 1856:77 (*Silvanus*)
?*communis* Grouvelle 1878:75 (*Silvanus*)
* *opaculus* LeConte 1856:78 (*Silvanus*)
trivialis Grouvelle 1878:75 (*Silvanus*)

Silvanoprus Reitter 1911:45
angusticollis Reitter 1876:59 (*Silvanus*)
* *scuticollis* Walker 1859:53 (*Silvanus*)
triangulus Reitter 1876:60 (*Silvanus*)

Monanus Sharp 1879:85
Emporius Ganglbauer 1899:578
* *concinnulus* Walker 1858:207 (*Monotoma*)
signatus Frauenfeld 1867:438 (*Silvanus*)
fasciatus Wollaston 1873:169 (*Cryptamorpha*)
fascipennis Reitter 1876:129 (*Cathartus*)

Cathartus Reiche 1854:77
* *quadricollis* Guérin-Méneville 1829-44:198 (*Silvanus*)
cassiae Reiche 1854:78
gemellatus Jacquelin du Val 1857:104 (*Silvanus*)

Ahasverus Gozis 1881:cxxvii
* *advena* Waltl 1834:169 (*Cryptophagus*)
guerini Allibert 1847:12 (*Silvanus*)
musaeorum Ziegler 1844:270 (*Latridius*)
angustatus Lucas 1847:221 (*Silvanus*)
striatus Rouget 1876:ccvii (*Cryptophagus*)
* *longulus* Blatchley 1910:564 (*Cathartus*)
parviceps Casey 1916:136 (*Silvanus*)
* *rectus* LeConte 1856:78 (*Silvanus*)

CUCUJIDAE

Cucujus Fabricius 1775:204
clavipes Fabricius 1781:257
var. *subnitens* Schaeffer 1931:175
puniceus Mannerheim 1843:303

Pediacus Shuckard 1839:185
depressus Herbst 1797:286 (*Cucujus*)
subglaber LeConte 1856:73
fuscus Erichson 1846:313
dermestoides Schonherr 1809:53 (*Cucujus*)
planus LeConte 1850:223
subcarinatus Mannerheim 1852:363

PASSANDRIDAE

Catogenus Westwood 1835:221
Anisoceras Hope 1840:131
Anisoceras Gemminger and Harold 1868:869 (not Hope 1840)
* _rufus_ Fabricius 1798:123 (_Cucujus_)
puncticollis Newman 1839:399
parvus Casey 1916:116
puncticeps Casey 1916:116
monilicornis Casey 1916:115

Scalidia Erichson 1846:305
Taphroscelidia Crotch 1873:44
Syssitos Sharp 1899:541
* _linearis_ LeConte 1863:70 (_Catogenus_)

LAEMOPHLOEIDAE

Lathropus Erichson 1846:327
* _vernalis_ Casey 1884:95
* _pictus_ Schwarz 1878:358
costatus Grouvelle 1902:763
pubescens Casey 1884:96
striatus Casey 1916:119
robustulus Casey 1916:120

Rhabdophloeus Sharp 1899:531
* _horni_ Casey 1884:89 (_Laemophloeus_)
disseptus Casey 1916:133 (_Cryptolestes_)

Cryptolestes Ganglbauer 1899:612
Leptus Thomson 1863:92
Fractophloeus Kessel 1921:28
* _capensis_ Waltl 1834:169
clavicollis Wollaston 1854:479 (_Laemophloeus_)
elongatulus Lucas 1849:479 (_Laemophloeus_)
vermiculatus Wollaston 1854:164 (_Laemophloeus_)
rotundicollis Casey 1884:89 (_Laemophloeus_)
* _ferrugineus_ Stephens 1831:223 (_Cucujus_)
testaceus Paykull 1800:168 (not Fabricius 1787) (_Cucujus_)
monilicornis Stephens 1831:223 (_Cucujus_)
concolor Smith 1851:6 (_Laemophloeus_)
obsoletus Smith 1851:7 (_Laemophloeus_)
carinulatus Wollaston 1877:44 (_Laemophloeus_)
emgei Reitter 1887:286 (_Laemophloeus_)
alluaudi Grouvelle 1906:120 (_Laemophloeus_)
pubescens Casey 1884:93 (_Laemophloeus_)
* _punctatus_ LeConte 1856:75 (_Laemophloeus_)
adumbratus Casey 1916:134
extricatus Casey 1884:92 (_Laemophloeus_)
geminatus LeConte 1856:75 (_Laemophloeus_)

* pusilloides Steel and Howe 1952:86 (Laemophloeus)
* pusillus Schonherr 1817a:55
minutus Olivier 1791:243 (not Fourcroy 1785) (Cucujus)
testaceus Stephens 1831:224 (Cucujus)
crassicornis Waltl 1839:225 (Laemophloeus)
longicornis Mannerheim 1843:303 (Laemophloeus)
brevis Fairmaire 1850:56 (Laemophloeus)
parallelus Smith 1851:7 (Laemophloeus)
pauper Sharp 1899:530 (Laemophloeus)
puberulus LeConte 1856:75 (Laemophloeus)
* turcicus Grouvelle 1876:xxxii (Laemophloeus)
truncatus Casey 1884:93 (Laemophloeus)
weisei Reitter 1880:78 (Laemophloeus)
schwarzi Casey 1884:83 (Laemophloeus)
* uncicornis Reitter 1874:45 (Microbrontes)
recticollis Reitter 1876:52 (Laemophloeus)
denticornis Casey 1884:94 (Laemophloeus)
iteratus Sharp 1899:528 (Laemophloeus)
addendus Sharp 1899:529 (Laemophloeus)
quadratus Casey 1884:90 (Laemophloeus)
* n.sp. 1
* n.sp. 2

Leptophloeus Casey 1916:135
Truncatophloeus Kessel 1921:28
* angustulus LeConte 1866:379 (Laemophloeus)

Dysmerus Casey 1884:97
Brontophloeus Kessel 1921:28
* basalis Casey 1884:97

Narthecius LeConte 1861:95
Paraphloeus Sharp 1899:509
* grandiceps LeConte 1863:70
breviceps Casey 1890:323
monticola Fall 1907:222
oregonensis Hatch 1961:200
simulator Casey 1890:322
striaticeps Fall 1907:222

Laemophloeus Dejean 1836:340
* biguttatus Say 1827:267 (Cucujus)
bisignatus Guérin-Méneville 1829-44:205
californicus Casey 1916:122
* fasciatus Melsheimer 1846:113
fervidus Casey 1916:121
* megacephalus Grouvelle 1876:425
floridanus Casey 1884:85
* lecontei Grouvelle 1876:496

- _shastanus_ Casey 1916:123
- * _suturalis_ Reitter 1876:50
- _terminalis_ Casey 1884:83
- * n.sp. 1

Charaphloeus Casey 1916:127

- * _adustus_ LeConte 1856:74 (_Laemophloeus_)
  - _fraterculus_ Casey 1916:124
- * _bituberculatus_ Reitter 1876:316 (_Laemophloeus_)
- * _convexulus_ LeConte 1879:2 (_Laemophloeus_)
  - _filiger_ Casey 1916:125
  - _sphaerops_ Casey 1916:126
- _dimidiatus_ Schaeffer 1910:215 (_Laemophloeus_)
- _flavosignatus_ Schaeffer 1910:214 (_Laemophloeus_)

Metaxyphloeus Thomas 1984a:67

- _texanus_ Schaeffer 1904:201 (_Rhinomalus_)

Placonotus Macleay 1871:168

- _Silvanophloeus_ Sharp 1899:537
  - _arizonensis_ Thomas 1984c:7
  - * _macrognathus_ Thomas 1984c:12
  - * _modestus_ Say 1827:268 (_Cucujus_)
    - _singularis_ Smith 1851:7 (_Laemophloeus_)
    - _liquidus_ Casey 1916:130 (_Silvanophloeus_)
    - _gundlachi_ Grouvelle 1874:499 (_Laemophloeus_)
  - _nitens_ LeConte 1856:75 (_Laemophloeus_)
    - _bullatus_ LeConte 1856:75 (_Laemophloeus_)
  - * _politissimus_ Wollaston 1867:67 (_Laemophloeus_)
    - _mirus_ Grouvelle 1905:142 (_Laemophloeus_ (_Silvanophloeus_))
    - _victus_ Kessel 1926:69 (_Laemophloeus_ (_Silvanophloeus_))
    - _commixtus_ Grouvelle 1912b:304 (_Laemophloeus_)
  - * _zimmermanni_ LeConte 1856:75 (_Laemophloeus_)
    - _apertus_ Casey 1916:128 (_Silvanophloeus_)
    - _illustris_ Casey 1916:129 (_Silvanophloeus_)
    - _sobrinus_ Casey 1916:129 (_Silvanophloeus_)

Parandrita LeConte and Horn 1880:133

- _cephalotes_ LeConte 1856:76 (_Laemophloeus_)
- * _permixtus_ Grouvelle 1912b:303 (_Laemophloeus_)

Phloeolaemus Casey 1916:127

- * _chamaeropis_ Schwarz 1878:359 (_Laemophloeus_)

Notolaemus Lefkovitch 1959a:102

- _macrocephalus_ Schaeffer 1910:214 (_Laemophloeus_)

Deinophloeus Sharp 1899:540

- _impressifrons_ Schaeffer 1910:213 (_Laemophloeus_)

KEY TO THE GENERA OF CUCUJIDAE, SILVANIDAE, PASSANDRIDAE AND LAEMOPHLOEIDAE KNOWN TO OCCUR IN AMERICA NORTH OF MEXICO

1. Tarsomere I longer than II (fig. 31), tarsal formula 5-5-5 in both sexes; aedeagus with parameres on dorsal aspect of median lobe; procoxal cavities closed posteriorly, usually broadly (fig. 32); suture between mesosternum and mesepisternum incomplete or obsolete (Silvanidae: Silvaninae)....................................23

1′. Tarsomere I usually shorter than II (fig. 33), tarsal formula 5-5-5 or 4-4-4 in both sexes, or 5-5-4 in males only; aedeagus with parameres on ventral aspect of median lobe (fig. 34); procoxal cavities usually open posteriorly (fig. 35, 36, 37, 38); suture between mesosternum and mesepisternum usually complete..................2

2(1′). Genae produced anteriorly as rounded plates covering maxillae (fig. 39); elytra, but not pronotum, with longitudinal grooves; tarsal formula 5-5-5 in both sexes; mesocoxal cavities closed laterally by juncture of meso- and metasterna (fig. 36) (Passandridae).............3

2′. Genae not produced anteriorly, maxillae free; if elytra with longitudinal grooves then pronotum also with grooves or carinae; tarsal formula often 5-5-5 in both sexes or 5-5-4 in males; mesocoxal cavities usually closed laterally by mesepisternum or mesepimeron or both (fig. 35, 37, 38).........4

3(2). Body subcylindrical (fig. 13); tarsomere I as long as II (fig. 40)..................*Scalidia* Erichson

3′. Body dorsoventrally compressed (fig. 12); tarsomere I distinctly shorter than II (fig. 41).. ....*Catogenus* Westwood

4(2′). Pronotum with longitudinal lines paralleling lateral margins (fig. 42); parameres fused to basal piece and reduced to tooth-like processes on ventral aspect of aedeagus (fig. 43) (Laemophloeidae)..............................10

4′. Pronotum without longitudinal lines paralleling lateral margins; parameres freely articulated to basal piece and not reduced (fig. 34)...........5

5(4′). Antennal scape elongate (fig. 2); tarsi not heteromerous in males, tarsomeres lobed in some genera (Silvanidae:Uleiotinae)..................6

5′. Antennal scape not elongate; tarsi heteromerous in males, tarsomeres not lobed (Cucujidae)..........9

6(5). Procoxal cavities open posteriorly (fig. 35); tarsomeres not lobed (Uleiotini)................7

6′. Procoxal cavities closed posteriorly; tarsomeres distinctly lobed (Telephanini)..................8

7(6). Tarsal formula 4-4-4; pronotum irregularly toothed laterally and with anterior angles strongly produced (fig. 44); males with curved mandibular processes (fig. 45).............*Uleiota* Latreille

7′. Tarsal formula 5-5-5, basal segment short but distinct (fig. 46); pronotum simple laterally, anterior angles not produced; males without mandibular processes........*Dendrophagus* Scbonherr

8(6′). Head dorsally with longitudinal impressed lines (fig. 47); apical maxillary palpomeres not securiform; tarsomere III bilobed (fig. 48).................................*Cryptamorpha* Wollaston

8′. Head dorsally without impressed lines; apical maxillary palpomeres securiform (fig. 49); tarsomere III simply lobed (fig. 50)...*Telephanus* Erichson

9(5′). Head produced laterally behind eyes (fig. 51); antennae not distinctly clubbed; color bright red............................*Cucujus* Fabricius

9′. Head not produced laterally behind eyes; antennae distinctly clubbed; color not bright red..*Pediacus* Shuckard

10(4). Sublateral line of pronotum carinulate, obviously raised above the surface of the pronotum; transverse epistomal groove absent, although epistome may be depressed.......................17

10′. Sublateral line of pronotum a groove, sometimes with a weakly expressed associated ridge; or, disc of pronotum depressed but without obvious groove or carinulate line; transverse epistomal groove sometimes present..............................11

11(10′). Intercoxal process of sternum III acuminate apically (fig. 52)............................12

11′. Intercoxal process of sternum III not acuminate apically.......................................14

12(11). Tarsomere I shorter than penultimate tarsomere; labrum shallowly emarginate apically; elytra carinate laterally.............Laemophloeus Dejean

12′. Tarsomere I at least subequal to penultimate tarsomere; labrum semicircular, not emarginate anteriorly; elytra usually not carinate laterally.......................................13

13(12′). Head rostrate................Metaxyphloeus Thomas

13′. Head not rostrate..............Charaphloeus Casey

14(11′). Head with distinct transverse groove separating frons from epistome (fig. 27, 28)................ ....Placonotus Macleay

14′. Head without distinct transverse groove separating frons from epistome, although region of head corresponding to clypeus may be depressed below level of frons................................15

15(14′). Anterior coxal cavities wide open posteriorly; mandibles of males in some species expanded laterally (fig. 30)............Phloeolaemus Casey

15′. Anterior coxal cavities nearly closed posteriorly; mandibles of males not expanded laterally.......16

16(15′). Elytral epipleura well defined, complete to apical angle; head moderate in size; basal angles of epistome not foveate; major males with clypeal horns.........................Deinophloeus Sharp

16′. Elytral epipleura poorly defined, becoming obsolete at midpoint of elytra; head large, almost as large as pronotum (fig. 29); basal angles of epistome foveate; males without clypeal horns..... ....Parandrita LeConte

17(10). Lateral margins of pronotum slightly to strongly undulating (fig. 14, 15); disc sometimes with paired anterior and posterior depressions (fig. 14, 15), these often faint.....................18

17′. Lateral margins of pronotum evenly curved, or, at most, simply sinuate; disc without paired anterior and posterior depressions......................19

18(17). Head with lateral lines; lateral margins of pronotum with irregular undulations; pronotum and elytra explanate laterally, elytra carinate laterally and with longitudinal discal costae; anterior coxal cavities open posteriorly; intercoxal process of sternum III narrowly rounded anteriorly (fig. 15)...........Rhabdophloeus Sharp

18′. Head without lateral lines; lateral margins of pronotum undulating at most; elytra without elytral cells, not carinate; intercoxal process of sternum III broadly rounded anteriorly (fig. 14).. ....Lathropus Erichson

19(17′). Anterior coxal cavities open posteriorly; elytra with only third cell developed................... ....Notolaemus Lefkovitch

19′. Anterior coxal cavities closed or nearly closed; elytra with all three cells developed...........20

20(19′). Intercoxal process of sternum III broadly rounded anteriorly (fig. 53).......Cryptolestes Ganglbauer

20′. Intercoxal process of sternum III narrowly rounded anteriorly (fig. 54)..........................21

21(20′). Epistome acuminate anteriorly (fig. 55)........... ....Narthecius LeConte

21′. Epistome truncate or emarginate anteriorly......22

22(21′). Pedicel attached laterally to scape, which is large and irregularly produced in males (fig. 20); pronotum quadrate..................Dysmerus Casey

22′. Pedicel attached axially to scape, which is normal in botb sexes; pronotum quadrate to elongate...... ....Leptophloeus Casey

23(1). At least tarsomere III lobed....................29

23′. No tarsomeres lobed............................24

24(23′). Lateral margins of pronotum simple; hind femora in males simple..................................27

24′. Lateral margins of pronotum dentate or undulating; hind femora in males toothed....................25

25(24′). Lateral margins of pronotum undulating (fig. 3, 4) 26

25′. Lateral margins of pronotum dentate (fig. 5)...... ....Oryzaephilus Ganglbauer

26(25). Head ventrally with antennal cavity (fig. 56)..... ....Eunausibius Grouvelle

26′. Head ventrally without antennal cavities.......... ....Nausibius Redtenbacber

27(24). Anterior angles of pronotum not produced anterolaterally (fig. 7); femoral lines open (fig. 57) ....Cathartosilvanus Grouvelle

27′. Anterior angles of pronotum produced anterolaterally; femoral lines closed (fig. 58)... 28

28(27′). Anterior angles of pronotum acute, usually produced more laterally than anteriorly (fig. 59). ....Silvanus Latreille

28′. Anterior angles of pronotum obtuse, produced more anteriorly than laterally (fig. 60).............. ....Pensus Halstead

29(23). Anterior angles of pronotum acute (fig. 8); femoral lines closed (fig. 61).................... ....Silvanoprus Grouvelle

29′. Anterior angles of pronotum lobed at most; femoral lines closed or open...........................30

30(29′). Pronotal margins simple; femoral lines open; elytra immaculate.............................31

30′. Pronotal margins denticulate (fig. 9); femoral lines closed; elytra maculate........Monanus Sharp

31(30). Body elongate, parallel-sided (fig. 10); antennomere XI at its broadest narrower than X (fig. 62); intercoxal process of sternum III pointed anteriorly...............Cathartus Reiche

31′. Body ovate (fig. 11); antennomere XI at its broadest equal in width to X (fig. 63, 64); intercoxal process of sternum III rounded anteriorly........................Ahasverus Gozis

SILVANIDAE

Diagnosis. The combination of the following character states will distinguish adults of this family from the others treated in this work: anterior coxal cavities closed in most genera (open in Uleiota and Dendrophagus, which are not present in Florida); aedeagus with articulated parameres; tarsal formula 5-5-5 in both sexes (4-4-4 in some species of Uleiota); antennae either clubbed or filiform, not moniliform; mandibles with dorsal mycangium (a more or less circular cavity on the dorsal surface of the mandible near the base the function of which, in at least one silvanid, is the transport of fungal spores (Crowson and Ellis 1969)); maxillae exposed, not concealed by genal processes; head and pronotum without sublateral carinae or grooves; elytra without elytral cells but with scutellary striole.

Larval diagnosis. Elongate, parallel-sided, somewhat flattened; mandible with acute retinaculum, and well-developed mola; mala acute apically, cardines bipartite; five or six pairs of stemmata; antennae either with three well-developed antennomeres (Uleiotinae) or with antennomere III reduced and fused to antennomere II (Silvaninae); frontal suture somewhat lyriform; frontoclypeal suture absent; dorsal surface of thoracic and abdominal segments without asperities; spiracles annular; legs well-developed, two tarsungular setae, close together in Silvaninae, widely separated in Uleiotinae; long, whip-like urogomphi present in some Uleiotinae, absent in all Silvaninae; abdominal segment X located terminally, produced as pseudopod.

Taxonomic notes. Like the other families treated in this work, this family has until recently been usually treated as a subfamily of the Cucujidae. However, Crowson (1955:104) removed the former subfamilies Silvaninae and Psammoecinae to the Silvanidae. Crowson (1967:211) later expressed doubt, stating "...Passandrinae and Silvaninae could well be subfamilies of Cucujidae..."; however, Sen Gupta and Crowson (1966:63; 1969:586-590) and Crowson (1973:62) continued to treat the Silvanidae, including the subfamily Uleiotinae, as a full family. Thomas (1984b:47-54) reviewed the phylogeny and suprageneric classification of the Silvanidae and divided it into two subfamilies, Uleiotinae and Silvaninae, with the former composed of two tribes, Uleiotini and Telephanini. In a similar study, Pal et al. (1985:213-217), retained Cryptamorphinae and Psammoecinae as subfamilies, in addition to Silvaninae and Uleiotinae, which they, like Thomas (1984b), considered to exhibit the most ancestral character states among the Silvanidae.

Hetschko (1930) listed 34 genera and 391 species worldwide that would now be assigned to Silvanidae. Genera and species described, and synonymies proposed since then (primarily by Nevermann, Halstead, Pal, and Sen Gupta), bring the world total to about 47 genera and approximately 470 species.

Biology. The biology and immature stages of the great majority of species and most genera are unknown, but the following generalizations can be made (the known biology of each genus and species occuring in Florida is reviewed below): Uleiotinae (Uleiotini) are found primarily under bark, where both adults and larvae probably feed on ascomycete and other fungi (Crowson and Ellis 1969; personal observations); Uleiotinae (Telephanini) are found primarily on plants, especially withered, pendant leaves, and in plant debris, where they also probably feed predominantly on fungi; Silvaninae are found under bark (e.g., Silvanus, Cathartosilvanus) or in leaf litter or soil (e.g., Silvanoprus, Monanus, some Ahasverus), where they also seem to feed on fungi. Some silvanines have been reported to be at least facultatively predaceous. Several species belonging to Oryzaephilus, Nausibius, Cathartus, and Ahasverus are important pests of stored grains, grain products, nuts, and spices. Their taxonomy and biology are the best known of the Silvanidae.

Distribution. The family is worldwide in distribution, but is most abundant at both the generic and species level in the tropics. There are 32 species here recorded from the

United States and 22 from Florida, including several stored products species. Although they may not be established, they may be introduced repeatedly.

Uleiotinae

Diagnosis. Members of the Uleiotinae may be distinguished from members of the Silvaninae by the following combination of character states: aedeagus inverted with parameres located on the ventral aspect of the median lobe; tarsomeres in some genera distinctly lobed ventrally; antennae elongate and filiform, without a distinct club.

Taxonomic notes. The traditional definition of the Uleiotinae includes only Uleiota, Dendrophagus, and, by extension, Brontopriscus. This is the arrangement followed by Hetschko (1930) and Pal et al. (1984). Thomas (1984b) grouped both the Uleiotini (composed of Uleiota, Dendrophagus, Brontopriscus, and Aplatamus) and the Telephanini (composed of Telephanus, Cryptamorpha, Platamus, Indophanus, and Psammoecus) in the Uleiotinae. Until recently (Crowson 1973), the Uleiotinae had been included in the Cucujidae rather than the Silvanidae.

Biology. Reviewed above.

Distribution. Worldwide but more abundant in the tropics. For example, Telephanus is represented by two species in tbe United States and about 100 in the Neotropics. Aplatamus and Platamus are exclusively Neotropical; Cryptamorpha is confined to the Old World tropics, except for one tropicopolitan species; Psammoecus is predominantly Old World tropical, but with species in Europe, Japan and northern Asia; Telephanus is almost exclusively Neotropical, with two U.S. species, and several described from the Old World tropics; Indophanus is confined to India; and Brontopriscus is confined to New Zealand. Four genera and seven species are known to occur in the U.S.; two of these occur in Florida. Only the tribe Telephanini is represented in Florida.

Telephanini

Diagnosis. From members of Uleiotini (which is not known to be represented in Florida), those of Telephanini can be distinguished by the following combination of character states: anterior coxal cavities closed; tarsomere I longer than II; antennal scape either very elongate (fig. 2) and maxillary palpi securiform (fig. 49) or head with longitudinal grooves (fig. 47); pronotum laterally with spines or stout setae.

Taxonomic notes. Is reviewed in this section under the subfamily.

Biology. Members of this tribe are found on plants or in leaf litter (see section on biology under subfamily).

Distribution. Worldwide but most abundant in the tropics (see this section under subfamily).

Genus *Cryptamorpha* Wollaston

Cryptamorpha Wollaston 1854:156

Pseudophanus LeConte 1860:84; syn. by Waterhouse 1877:122

Parabrontes Redtenbacher 1867:40; syn. by Waterhouse 1877:122

Type species. Of *Cryptamorpha*, *Psammoecus desjardinsi* Guérin-Méneville [by synonymy of *Cryptamorpha musae* Wollaston]; of *Pseudophanus*, *P. signatus* LeConte [by monotypy]; of *Parabrontes*, *P. silvanoides* Redtenbacher [by monotypy].

Diagnosis. *Cryptamorpha* most resembles *Telephanus* in the New World, but can be distinguished easily by the longitudinal grooves on the frons, shorter antennal scape, non-securiform maxillary palpi, and strongly bilobed tarsomere III.

Taxonomic notes. The generic synonymy was first proposed by Waterhouse (1877:122) and has been accepted by most subsequent authors. Hetschko (1930:88) listed 24 species in this genus; Pal and Sen Gupta (1979:78-80) described two new species from India and Bhutan. The genus has never been revised, nor are there any comprehensive keys to the species. Most of the original descriptions are brief and without illustrations, thus specific identifications require, in most cases, comparisons with types.

Biology. The little information published on the biology of this genus (almost entirely on *Cryptamorpha* desjardinsi) suggests that their biology is similar to members of Telephanus.

Distribution. Of the species listed by Hetschko (1930:88-90), only desjardinsi and redtenbacheri (Reitter) occur in the New World. The former is tropicopolitan; the latter may be generically distinct (Thomas 1984b).

Cryptamorpha desjardinsi (Guérin-Méneville)
(fig. 1, 47)

Psammoecus desjardinsi Guérin-Méneville 1829-44:196

Cryptamorpha musae Wollaston 1854:157; syn. by Waterhouse 1877:122

Pseudophanus signatus LeConte 1860:85; syn. by Waterhouse 1877:122

Psammoecus hubbardi Casey 1884:167; syn. by Casey 1890:498

Diagnosis. Length 3.3-4.4mm. Cryptamorpha desjardinsi can only be confused with Telephanus velox in the Florida fauna; the generic diagnoses will distinguish the two species. According to the key in Grouvelle (1917:45), it can be distinguished from other species of Cryptamorpha by possession of prosternal process not inflexed behind tbe coxae and elytra less than three times longer than wide.

Taxonomic notes. Because of its wide distribution, this species has been described several times in several genera. Waterhouse (1877:122) proposed most of the above synonymies. Casey (1890:498) synonymised his own species. Adults appear to be distinct and easily distinguished from adults of the

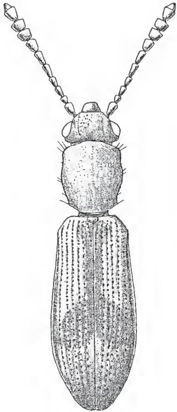


Fig. 1. Cryptamorpha desjardinsi (Guérin-Mèneville), habitus.Length 3.3mm - 4.4mm.

other species of the genus by the characters given in the diagnosis above.

Biology. Blatchley (1928:67) reported collecting a specimen at Dunedin, Florida in December ". . . by beating a pile of dead leaves of cabbage palmetto. . ." Loding (1945:79) reported it "At light and in mud on river bank." Lepesme (1939:62) reported it was imported into France on bananas and pineapples (". . . presque exclusivement sur les bananes et les ananas avec lesquels il est importé. . ."). He also reported that adults feed on plant debris, but that the larvae are predaceous ("L´adulte paraît se nourrir de débris d´origine végétal. La larve, au contraire, est carnassière . . ."). Bowler et al. (1977:452), however, reported that larvae were abundant in Hawaii beneath leaf sheaths of sugarcane infected with sugarcane smut (Ustilago scitaminea Syd.), upon which they feed.

Distribution. Hetschko (1930:88) listed it as "Kosmopolit". Blackwelder (1945:423) recorded it from St. Vincent and Grenada. LeConte´s Pseudophanus signatus was described from Puget Sound, Ore. As Casey (1884:105) and Hatch (1961:206) pointed out, this was most likely based on an introduction; it has not been reported since from the Pacific Northwest. Leonard (1928:382) reported it from New York City; this record also is almost certainly based on an introduced specimen. Loding (1945:79) recorded it from Alabama.

Specimens examined. Twenty-eight, all from Florida, representing 11 collection records (for complete data see Appendix).

Genus Telephanus Erichson

Telephanus Erichson 1846:329

Heterodromia Haldeman 1848:127; syn. by Melsheimer 1853:45

Diagnosis. 3.6mm - 4.3mm. The laterally spinose prothorax (fig. 2), elongate antennal scape, securiform maxillary palpi (fig. 49), inverted aedeagus, and approximate mesocoxae are diagnostic for members of this genus.

Taxonomic notes. The date for Haldeman's paper has usually been cited as 1846; however, the title page to the volume indicates it was actually printed in 1848. This is one of the largest silvanid genera, with Hetschko (1930) listing 64 species. Nevermann (1931, 1932, 1937) added 47 species from Central America and the Antilles, and Thomas (1984b) added a new species from Jamaica. There are only two species known from the United States. Although the Central American and Antillean species are fairly well-known because of Nevermann's revisions, the South American fauna is in need of revision; South American specimens of Telephanus are virtually unidentifiable. Specimens should be handled carefully, since the easily-broken prothoracic spines are important in identification.

Biology. Nevermann (1931) presented a detailed review of the biology of the Neotropical members of this genus. Like most members of this tribe, these beetles appear to be associated with withered, pendant leaves or litter rather than loose bark. I collected numerous specimens of Telephanus haitianus Nevermann by beating Lobelia assurgens in the Massif de la Selle mountains in southeastern Haiti.

Distribution. This is a predominantly New World genus, with 105 of the 114 described species occurring in the New World, where members of the genus range from southern Canada south to Brazil and throughout the Antilles. Species have also been described from Mauritius, New Guinea, Madagascar, Borneo, and Hawaii.

Telephanus velox (Haldeman)

(fig. 2, 49)

Heterodromia velox Haldeman 1848:127

Telephanus velox, Melsheimer 1853:45

Diagnosis. Length 3.6-4.3mm. The generic characters given in the diagnosis above distinguish it from all other Florida silvanids.

Taxonomic notes. This is such a distinct species that there has been no confusion over its identity. Erichson (1846:329-330) described the genus in a footnote and proposed the new species name atricapillus. Since Erichson did not describe the species, this name has been treated as

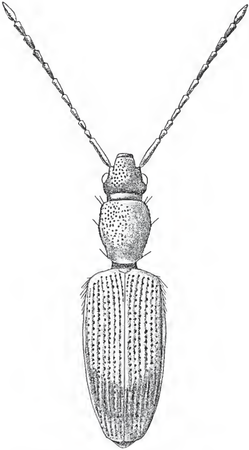


Fig. 2. *Telephanus velox* (Haldeman), habitus. Length 3.6mm - 4.3mm.

a nomen nudum in most subsequent literature (although it was treated as a valid name by Smith (1851:14)).

Biology. Casey (1884:103) noted that it is ". . . very common under rubbish of various sorts . . ." Smith (1910:263) reported that in New Jersey it occurs "Throughout the State, under stones and old leaves; rarely under bark; may be sifted out from fall to late spring." Blatchley (1910:569) wrote that in Indiana it "Occurs more often beneath stones, chunks and dead leaves than beneath bark. When exposed it usually remains quiescent with antennae folded against sides, but if touched it runs with great swiftness, whence its specific name." Kirk (1969, 1970) recorded it in South Carolina from "woodstrash," broomsedge, in hollow trees, at lights, and on soil. The Florida specimens I have seen were collected in ultraviolet light traps, in pitfall trap, and from soybean plants.

Distribution. LeConte (1856:77) reported it from the ". . . Middle, Southern and Western States . . ." It has also been recorded from New Jersey (Smith 1910:263), North Carolina (Brimley 1938), New York (Leonard 1928), Alabama (Loding 1945), Indiana (Blatchley 1910), South Carolina (Kirk 1969, 1970), and Florida (Thomas 1979). I have seen specimens from Arizona, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Maryland, Massachusetts, Michigan, New Hampshire, New York, North Carolina, Ohio, Oklahoma, Ontario, Tennessee, Virginia, and Wisconsin. In Florida it has been collected only in the northern third of the state.

Specimens examined. More than 80, of which 18 were from Florida, representing four collection records (for complete data see Appendix).

Silvaninae

Diagnosis. Members of this subfamily can be distinguished by the following combination of character states: tarsal formula 5-5-5 in both sexes; tarsomere I longer than II; mandibular mycangium present, but reduced in size compared to that found in Uleiotinae; antennae clubbed; anterior coxal cavities closed; aedeagus not inverted, parameres located on dorsal aspect of median lobe.

Taxonomic notes. Although until recently placed as a subfamily of the Cucujidae, this group of genera is distinct and easily characterized.

Biology. The biology of the members of this subfamily were reviewed in this section under the family discussion.

Distribution. Worldwide, but most abundant and diverse in the tropics.

Genus Nausibius Redtenbacher

Nausibius Redtenbacher 1858:998

Type species. Cucujus clavicornis Kugelann [by synonymy of Corticaria dentata Marsham, type by monotypy].

Diagnosis. Most similar in Florida to Oryzaephilus and Eunausibius. Members of Nausibius can be separated from those of Oryzaephilus by having tarsomere III simple (incrassate in Oryzaephilus) and pronotum laterally undulate instead of toothed. The antennal club in Nausibius also appears to be composed of four antennomeres, and pronotum usually with a crescentic depression at base.

Taxonomic notes. According to Halstead (1980:344) this genus, as presently composed, is polyphyletic, with repandus, sahlbergi, and similar species generically distinct from the group of species related to major and clavicornis.

Biology. The biology of most species is unknown. Nausibius clavicornis is a minor pest of stored products, especially raw or yellow crystal sugar (Breese and Wise 1959); N. major is found under bark of oaks (Quercus spp.), and N. repandus has been collected on pine (Pinus spp.) in association with bark beetles (Scolytidae).

Distribution. Except for the cosmopolitan N. clavicornis, members of this genus are restricted to the New World.

Key to the adults of Florida species of Nausibius

1. Body depressed, slender, parallel-sided; pronotal margins slightly undulating; pronotum basally without distinct crescentic depression...........2

1′. Body more convex, more robust, not as parallel-sided; pronotal margins distinctly undulating; pronotum basally with distinct crescentic depression....................................3

2(1). Coarsely, densely punctate and pubescent dorsally, punctures deep; color piceous...repandus (LeConte)

2′. Dorsal surface appearing almost impunctate, punctures very shallow and ill-defined, dorsal surface glabrous; color castaneous................ ....sahlbergi Grouvelle

3(1′). Pronotum with a distinctly less densely punctate area medially (cosmopolitan, stored products pest) ....clavicornis (Kugelann)

3′. Pronotum without a distinctly less densely punctate area medially...........major Zimmermann

Nausibius clavicornis (Kugelann)

Cucujus clavicornis Kugelann 1794:511

Nausibius clavicornis, Fauvel 1889:132

Corticaria dentata Marsham 1802:108; syn. by Fauvel 1889:132

Sylvanus denticulatus Macleay 1825:46; syn. by Halstead 1980:345

Silvanus intermedius Smith 1851:16; syn. by Gemminger and Harold 1868:880

Silvanus latus Fairmaire 1850:53; syn. by Fauvel 1884:73

Rhizophagus parallelus Walker 1858:206; Hetschko 1930:73

Diagnosis. Length 3.2mm - 4.1mm. Adults of this species can be distinguished from the very similar major by the sparser punctation of the pronotal disc.

Taxonomic notes. Halstead (1980:349) noted that many North American literature records for this species actually refer to major, with which it has long been confused.

Biology. Halstead (1980:349) wrote that it is ". . . undoubtedly subcorticolous in the field . . .", and Ganglbauer (1899:581) reported that it is found in old nests of bees in South America. Breese and Wise (1959) reviewed the literature records and reported in detail on its biology in the laboratory. They list the following commodities in which clavicornis has been found: rice, dried apples, ginger, logwood (Haematoxylon), and cassia husks. It is most common in sugar, especially those kinds of unrefined sugars with a high proportion of molasses, but Breese and Wise (1959:257) concluded: "It is unlikely that N. clavicornis could multiply rapidly in raw or unrefined sugar, and any deterioration in stored sugar directly attributable to it would probably be small in comparison with that caused by other factors." Wolcott (1950:298) reported it from Puerto Rico and noted it ". . . has repeatedly been found since in brown sugar."

Distribution. Halstead (1980:347) wrote that "Although indigenous to the Neotropical region, this species has been carried to all parts of the world by commerce and has become established in warmer regions." He reported specimens from Madeira, Zaire, Uganda, Zimbabwe, Reunion, Sri Lanka, Burma, China, Japan, Philippines, Hawaii, Australia, Canada, U.S.A., Mexico, Guatemala, Belize, Nicaragua, Panama, Brazil, Cuba, Jamaica, Puerto Rico, Dominica, St. Vincent, and Trinidad. In the U.S., he reported it from California, Texas, New York, Pennsylvania, Maryland, North Carolina, South Carolina, and Florida.

Specimens examined. Only three, and none from Florida.

Nausibius major Zimmermann

Nausibius major Zimmermann 1869:257
Nausibius dentatus var. major, Crotch 1873:44
Nausibius clavicornis auctorum (in part), not Kugelann 1794:511
Nausibius major, Halstead 1980:349

Diagnosis. Length 3.9mm - 5.1mm. Adults have denser punctation of the thoracic disc than those of clavicornis. Halstead (1980:349) also stated that antennomere VIII is less transverse and pronotal teeth less prominent in major than in clavicornis.

Taxonomic notes. Zimmermann (1869:257) noted the close resemblance of his species to clavicornis, but wrote that major is ". . . somewhat larger, of black color, with reddish-brown antennae and legs, and perceptibly more coarsely punctured." Crotch (1873:44) treated major as a variety of dentatus. Casey (1884:75) wrote, after examining specimens of major, ". . . that it is simply N. dentatus

[=clavicornis] without any difference at all, as far as I can discover." After being treated as a variety or synonym of clavicornis for nearly a century, this name was revived by Halstead (1980:349), who stated that ". . . I am convinced that the magnitude of difference shown by external characters warrants specific status for N. major."

Biology. Zimmermann (1869:257) said ". . . found only under the bark of old oaks." Halstead (1980:350) reported one specimen ". . . collected on `Scarlet oak assoc carpenter worm attack´ and two were caught at light." Although most of the specimens I have seen were without data or were collected in ultraviolet light traps, I collected several specimens from an oak (Quercus sp.) with a slime flux.

Distribution. Zimmermann (1869:257) described it from "Carolina". Halstead (1980:350) reported specimens from Arizona, Arkansas, Colorado, District of Columbia, Florida, Georgia, Illinois, Kentucky, Louisiana, Maryland, Michigan, New Jersey, New York, North Carolina, Tennessee, Texas, and Virginia. I have seen additional specimens from the states of Ohio and Oklahoma. There is also a specimen in the FSCA with the following data: MEXICO, Nuevo Leon, 4 mi. S. Monterrey nr. Siesta Motel, 12-VII-1963 R.H. Arnett, Jr. and E.R. VanTassell. This is the first record from Mexico and the first from outside the U.S.A.

Specimens examined. More than 30, of which three were from Florida, representing two collection records (for complete data see Appendix).

Nausibius repandus LeConte

(fig. 3)

Nausibius repandus LeConte 1866:70

Diagnosis. Length 2.4mm - 2.8mm. Adults of this species are most similar to those of *sahlbergi* in the Florida fauna, but differ in their much more coarsely punctured and distinctly pubescent dorsal surface. Adults of both *repandus* and *sahlbergi* differ from those of *major* and *clavicornis* by their smaller size, more parallel-sided and flattened body form, and lack of a basal crescentic depression on the pronotum.

Taxonomic notes. This is a distinctive species with no specific synonyms. As noted above, Halstead (1980:344 and *in litt.*) stated that it and several other species, including *sahlbergi*, are not congeneric with *clavicornis*.

Biology. Blatchley (1918:423) reported collecting a specimen ". . . at Dunedin while sweeping huckleberry and other low shrubs . . ." and (1928:67) ". . . beaten from the tops of recently felled pine." On two occasions, I have collected adults of this species from beneath outer bark scales of small, cut pines and pine branches infested with scolytids and one first instar silvanid larva from within the bark beetle galleries themselves.

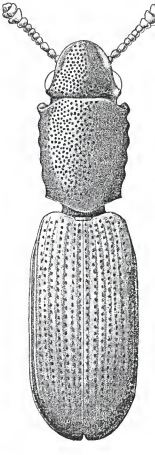


Fig. 3. Nausibius repandus LeConte, habitus. Length 2.4mm - 2.8mm.

Distribution. LeConte (1866:379) described it from Washington, D.C. and Schwarz (1878:445) recorded it from Florida. I have not been able to find any additional published distribution records. I have seen specimens from Florida and Alabama.

Specimens examined. Twenty, of which 18 were from Florida, representing four collection records (for complete data see Appendix).

Nausibius sahlbergi Grouvelle

Nausibius sahlbergi Grouvelle 1896:206

Diagnosis. Length 3.0mm - 3.3mm. Similar to *repandus* in general body form, but dorsally glabrous and with very shallow, ill-defined punctures that give the impression that the surface is almost impunctate. Additionally, all specimens I have seen of *sahlbergi* have been castaneous in color, those of *repandus* piceous.

Taxonomic notes. This species has only been mentioned in the literature once since its description, and that was Halstead's (1980:344) opinion that this and related species are not congeneric with *clavicornis* and *major*.

Biology. Nothing has been published on its biology. Most specimens I have seen were collected in ultraviolet light traps.

Distribution. It was described from Brazil; I have seen specimens from Panama and Florida.

Specimens examined. More than 50, of which two were from Florida, with the following label data: 2, "Dade Co. Fla. v. 1949"/ "Cathartus quadricollis det. H.F. Strobecker" (FSCA).

Genus *Eunausibius* Grouvelle

Eunausibius Grouvelle 1912a:314

Type species. Grouvelle (1912a:314) described tbis genus for *Nausibius tenebrionoides* Grouvelle and *N. elongatus* Grouvelle, without designating a type species. Since Halstead is currently revising this group of genera, I will leave it to him to designate a type species.

Diagnosis. The species are most similar to those of *Nausibius* related to *repandus*, but they possess ventral antennal grooves on the head (fig. 56).

Taxonomic notes. Except for the assignment of three additional species by Schwarz and Barber (1921:192) and Parsons (1974:181-184), there has been little taxonomic activity in this genus. The species appear to be relatively uncommon in collections.

Biology. Wheeler (1921:88-91) reported on the biology of *E. wheeleri* Schwarz and Barber in Guyana. It inhabits the hollow petioles of the ant tree, *Tachigalia* sp., wbere all stages feed on the tissue of the inner walls of the petiole and on honeydew, which the beetles actively solicit, from coccids that also inhabit the petioles.

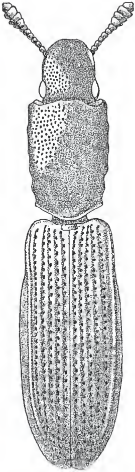


Fig. 4. *Eunausibius salutaris* Parsons, habitus. Length 3.3mm - 4.1mm.

Distribution. Except for the single specimen from Florida, the members of this genus appear to be restricted to South America.

Eunausibius salutaris Parsons

(fig. 4, 56)

Eunausibius salutaris Parsons 1974:182

Diagnosis. Length 3.3mm - 4.1mm. The well-marked antennal grooves (fig. 56) and general habitus (fig. 4) easily distinguish this species in the Florida fauna.

Taxonomic notes. Parsons (1974:181) noted that it and *E. lophius* Parsons key to *E. elongatus* (Grouvelle) in Grouvelle's (1912a:314) key, but both can be distinguished from that species by their depressed and laterally carinate elytra (*cf*. convex and not carinate). *Eunausibius salutaris* can be immediately distinguished from *lophius* by its much smaller eyes and by the antennal insertions, which are situated one-third of the length of an eye in front of the eyes in *lophius* and the length of an eye in *salutaris*. Halstead (*in litt*.) questioned the generic assignment of *salutaris*.

Biology. Nothing has been published on the biology of this species. I have examined specimens from Venezuela that were collected in association with Pseudococcidae.

Distribution. It was described from Brazil (Parsons 1974:184) and has not been reported in the literature since.

It is here recorded from Florida and Venezuela for the first time.

Specimens examined. Four, of which one was from Florida, with the following data: "FLORIDA: Broward Co. Ft. Lauderdale V-1983 Coll. by F.W. Howard" (FSCA), and three were from Venezuela: "Est. Exb. Yaritagua Edo Yaracuey 1967 Osorio Coll."/"asociados con Pseudococcidae en caña de azúcar" (FSCA).

Genus *Oryzaephilus* Ganglbauer

(fig. 5)

Silvanus (*Oryzaephilus*) Ganglbauer 1899:584

Oryzaephilus, Reitter 1911:45

Type species. *Silvanus surinamensis* (Linnaeus) [by subsequent designation of Halstead 1980].

Diagnosis. Of Florida silvanids, only members of *Oryzaephilus* possess six distinct teeth on the lateral margin of the prothorax (fig. 5). Additionally, members of this genus can be distinguished by the combination of the following character states (Halstead 1980:276-277): body elongate, more or less parallel-sided; tarsomere III incrassate; head without ventral grooves; antennae with 11 antennomeres, antenna with antennomeres IX-XI forming a distinct club, antennomere XI not obviously acuminate; temples present; femoral lines not produced caudally.

Taxonomic notes. With Halstead's (1980) revision, this has become one of the taxonomically best known of flat bark beetle genera. One of the prime reasons for this is their economic importance as stored-products pests, especially O. surinamensis, the saw-toothed grain beetle, and O. mercator, the merchant grain beetle. Described as a subgenus of Silvanus by Ganglbauer in 1899, it was raised to generic rank by Reitter (1911:45). Hetscbko (1930:67-70) listed eight species; Halstead (1980) included 13 species. Major references to the taxonomy and morphology of members of the genus include Grouvelle (1912a), Guillebeau (1890), Honomichl (1978), Howe (1953), Joshi (1976), Pajni and Bedi (1975), Slow (1958), and Spilman (1960).

Biology. Their natural habitat appears to be under bark (Halstead 1980:274), although Tbomas (1984b:53) suggested that their occurrence under bark may be incidental to other factors. References that deal with the biology of members of this genus include: Aitken (1966), Arbogast (1976), Ashman and Higgs (1968), Back and Cotton (1926), Barnes and Kaloostian (1940), Blackman (1966), Corbett et al. (1937), Howe (1956), Jacob (1981), Loschiavo (1976), Pierce et al. (1981), Saxena and Kaul (1976), Sinha (1965), Surtees (1963), White and Sinha (1981), Wojcik (1969).

O. surinamensis and O. mercator are common and serious pests of stored products, with surinamensis being more abundant on cereals and cereal products, dried fruit, copra, nuts, and carob, whereas mercator is more common on oil nuts and their products (Halstead 1980:290, 309). Two other

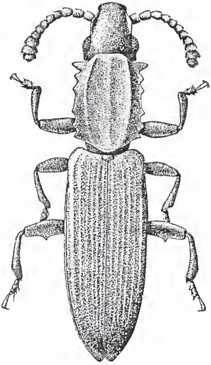


Fig. 5. Oryzaephilus acuminatus Halstead, habitus. Length 3.3mm - 3.7mm.

species, O. gibbosus Aitken and O. acuminatus Halstead, have been intercepted in Great Britain on coconut shells (Aitken 1965; Halstead 1980). The latter species was collected recently in large numbers in Florida in a shipment of neem (Azadirachta indica A. Juas) seed imported from India (Thomas and Woodruff 1984) and may be established.

Distribution. Except for the widely distributed stored products species, the members of this genus are restricted to the Old World, especially to the warmer areas. Three species have been collected in Florida. Although both surinamensis and mercator are virtually worldwide in distribution, only the former is capable of surviving temperate zone winters but cannot complete development at temperatures below 20 degrees Celsius (Halstead 1980:290, 309). See Aitken (1975) for detailed distribution records.

Key to the adults of Florida species of Oryzaephilus

1. Temple at least one-half length of eye (fig. 65), not sharply angulate behind...surinamensis (Linnaeus)

1′. Temple less than one-third length of eye (fig. 66), sharply angulate behind....................2

2(1′). Anterior pronotal angle moderately developed in large males, body less elongate (3.6-4.1:1); pronotum of large males with lateral ridges not strongly elevated ....mercator Fauvel

2′. Anterior pronotal angles strongly developed in large males (fig. 5); body more elongate (3.9-4.4:1); pronotum of large males with lateral ridges strongly produced.......acuminatus Halstead

Genus Silvanus Latreille

Silvanus Latreille 1804:158

Leptus Duftschmidt 1823:156 [replacement name for Silvanus]

Type species. Ips unidentata Olivier [by monotypy].

Diagnosis. The species of Silvanus can be distinguished in Florida by the following combination of character states: lateral margins of pronotum simple; anterior angles produced anterolaterally (fig. 6,59); tarsomere III simple.

Taxonomic notes. The taxonomic history of Silvanus is similar to that of Laemophloeus in the Laemophloeidae. As traditionally constituted, it was a highly polyphyletic assemblage of silvanids sharing little more than a vague external similarity. Grouvelle (1912a) recognized this and proposed a number of subgenera, none of which was accepted until recently. Hetschko (1930:59-63) included 55 species in Silvanus. Halstead (1972) adopted three of the four subgenera proposed by Grouvelle (1912a) and elevated them to generic rank, in addition to proposing three new genera. As defined by Halstead (1973), Silvanus contains 17 species and is a more natural, easily characterized taxon than it was previously.

Biology. These beetles are generally found under the bark of logs and dead trees, where they are at least partly fungivorous (Halstead 1973:42). Eight species of Silvanus have been recorded from stored products imported into Great Britain, but none is a serious pest; Halstead (1973:42) noted that their presence ". . . may often be due to cross-infestation from dunnage and timber."

Distribution. This genus is represented throughout the world except for South America.

Key to adults of Florida species of Silvanus

(Modified from Halstead 1973)

1. Pronotum more or less parallel-sided, at least in apical half; anterior angles obtusely lobed, not at all acute; temples rounded...recticollis Reitter

1′. Pronotum not obviously parallel-sided, more or less strongly convergent to base; anterior angles more or less angulate, not lobed; temples toothed..2

2(1′). Anterior angles of pronotum less acute, not strongly produced laterally (fig. 6)............3

2′. Anterior angles of pronotum more acute, strongly produced laterally (fig. 59)....................4

3(2). Head and pronotum glossy, punctation of frontal triangle obviously different from sides of head; temple extending laterally beyond eye (fig. 6) (common, widespread species under bark)..*planatus* Germar

3′. Head and pronotum dull; punctation of frontal triangle not obviously different from sides of head; temple not extending laterally beyond eye (single southern Florida record)..*proximus* Grouvelle

4(2′). Eyes very large, separated dorsally by 1.5 to 1.7 times their length; pronotum without well-defined lateral foveae.....................*lewisi* Reitter

4′. Eyes not as large, separated dorsally by 1.9 to 2.1 times their length; pronotum with well-defined lateral foveae......................*muticus* Sharp

Silvanus lewisi Reitter

Silvanus lewisi Reitter 1878:57

Diagnosis. Length 2.1mm - 2.3mm. The very large eyes distinguish adults of this species from those of all other Florida species of *Silvanus*.

Taxonomic notes. This is a distinctive species with no recorded synonyms.

Biology. Often imported into Great Britain on stored products or dunnage from the Oriental region and Africa, this species has been recorded on desiccated coconut, tapioca flour, rice, pulses, bark residues, gum arabic, groundnut kernels, and red beans, as well as under bark, on freshly fallen coconut palms, and at light (Halstead 1973).

Distribution. Halstead (1973) listed the distribution of *S. lewisi* as India, Sri Lanka, China, Vietnam, Taiwan, Japan, West Malaysia, Singapore, Philippines, Java, Borneo, New Guinea, Solomon Islands, Australia, Congo, and Ghana. It has not been recorded previously from the New World; the specimens listed below may represent separate introductions. It is possible that this species has become established in southern Florida.

Specimens examined. Four, of which two were from Florida with the following data: 1, "Dade Co., Fla. 19 " (FSCA); 1, "FLA., Broward Co., Davie 24-II-1983 L. Daigle"/"on book in office" (FSCA).

Silvanus muticus Sharp

(fig. 59)

Silvanus muticus Sharp 1899:560

Diagnosis. Length 2.3mm - 3.0mm. In Florida, only adults of *S. lewisi* could be confused with those of this species; both have acute, well-developed anterior pronotal angles. However, in *S. muticus* the eyes are smaller and the longitudinal pronotal depressions are distinct.

Taxonomic notes. This is a distinctive species with no recorded synonyms. However, Halstead (1973:70) noted that it has often been confused with the similar S. bidentatus, which also occurs in North America, but apparently much less frequently that does S. muticus.

Biology. Halstead (1973:70) recorded it from under bark of pine, maple, oak, chestnut, and juniper, and at light.

Distribution. The type locality is Guatemala and Halstead (1973:70) recorded it from Canada (Montreal), and in the United States from Alabama, Arkansas, California, Florida, Georgia, Illinois, Iowa, Kansas, Louisiana, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, West Virginia, and Wisconsin.

Specimens examined. More than 120, of which 40 were from Florida, representing 17 collection records (for complete data see Appendix).

Silvanus planatus Germar

(fig. 6)

Silvanus planatus Germar 1824:466

Silvanus zimmermanni Guérin-Méneville 1829-44:198

Silvanus cognatus LeConte 1856:77

Diagnosis. Length 2.3mm - 2.8mm. From adults of other Florida species, those of S. planatus can be distinguished by the following combination of character states: Anterior

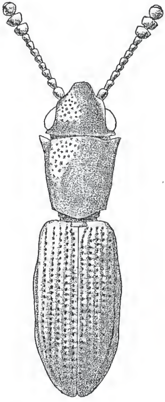


Fig. 6. Silvanus planatus Germar, habitus. Length 2.3mm - 2.8mm.

pronotal angles obtuse (fig. 6); head and pronotum glossy; longitudinal pronotal depressions absent (fig. 6).

Taxonomic notes. Adults of this species are very similar to the European S. unidentatus (Olivier), which is established in North America, and S. nitidulus LeConte. Neither species is known to occur in Florida. From the former, adults of planatus can be distinguished by their glossy dorsal surface and longer temple, and from the latter by the presence of basal pronotal angles and generally larger body size.

Biology. Under bark of various hardwoods (Halstead 1973:65).

Distribution. Halstead (1973:65) recorded it from Ontario and Quebec in Canada and, in the United States, from Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Louisiana, Maryland, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, and Virginia.

Specimens examined. More than 120, of which 77 were from Florida, representing 17 collection records (for complete data see Appendix).

Silvanus proximus Grouvelle

Silvanus proximus Grouvelle 1904:183

Silvanus amabilis Grouvelle 1914:140; syn. by Halstead 1973:61

Diagnosis. Length 1.8mm - 2.3mm. The following combination of character states distinguishes adults of this species from those of other Florida species: Head snd pronotum dull; snterior pronotal angles gradually developed, broad and blunt; elytral apex often toothed.

Taxonomic notes. Adults of *proximus* most resemble those of *planatus* in the Florida fauna, but the dorsal surface is dull rather than glossy as in the latter species.

Biology. "Occurs occasionally in association with stored products imported into Britain from Africa and one specimen was found on brazil-nut residues in a ship carrying nuts from Belon, Brazil. It has been sifted from oil-palm fruits, *Elaeis* . . . , caught at light and found in humus and forest-floor litter." (Halstead 1973:63)

Distribution. Widespread in Africa and introduced into the Neotropics. Halstead (1973:63) recorded it from Guinea, Sierra Leone, Ivory Coast, Ghana, Cameroun, Gabon, Zaire, South West Africa, Tanzania, Mexico, Venezuela, Brazil, St. Thomas, Martinique, and Grenada. It is here recorded from Florida for the first time.

Specimens examined. Six, of which five were from Florida, with the following data: "FLORIDA: Broward County I-1984 in a building Collected by Jacques" (FSCA).

Silvanus recticollis Reitter

Silvanus recticollis Reitter 1876:61

?Leucohimatium breve Wollaston 1873:170; see Halstead 1973:55

Silvanus reflexus Reitter 1880:25; syn. by Halstead 1973:56

Silvanus vitulus Grouvelle 1882:294; syn. by Halstead 1973:56

Silvanus (Microsilvanus) pumilus Grouvelle 1912a:332; syn. by Halstead 1973:56

Silvanus (Microsilvanus) minimus Grouvelle 1912a:334; syn. by Halstead 1973:56

Diagnosis. Length 1.7mm - 2.2mm. Adults of this species can be distinguished from those of other Florida species of this genus by the following combination of character states: Sides of pronotum more or less parallel to apex; anterior angles obtuse and directed more anteriorly than laterally; eyes small; dorsal surface dull.

Taxonomic notes. A widespread, variable species, it was described several times by Reitter and Grouvelle, whose species were synonymized by Halstead (1973:56). Grouvelle (1912a:332) described Microsilvanus as a subgenus of Silvanus for this species (and its synonyms). Halstead (1973) did not employ subgenera in his revision of Silvanus and related genera, and the status of Microsilvanus has not been resolved. Halstead (1973:55) wrote that Leucohimatium breve Wollaston, described from Japan, is "...almost certainly the same species as *recticollis*...", but was unable to locate Wollaston's type.

Biology. Nothing is known about the biology of this species except that it is attracted to light.

Distribution. Widespread in the Old World tropics, it has been recorded from India, Thailand, Vietnam, Laos, Sulawesi, Japan, Ryukyu Islands, Congo, Zaire, Zimbabwe, (Halstead 1973:57). Thomas (1979:357) reported it for the first time from the New World, based on a Florida specimen. There was some doubt whether the specimen was adventitious, but a specimen subsequently collected in Georgia (see below) suggests that this species is established in the southeastern United States.

Specimens examined. Three, two of which were from the United States with data as follows: 1, "FLA., Indian River Co., Fellsmere 4-IX-1975 Coll. M.C. Thomas blacklight trap" (MCTC); 1, "Clarke Co., GA. Whitehall Forest VI-21-1979 R. Turnhow blk. light" (RHTC).

Genus *Cathartosilvanus* Grouvelle

Silvanus (*Cathartosilvanus*) Grouvelle 1912a:340
Cathartosilvanus, Halstead 1973:81

Type species. *Silvanus opaculus* LeConte [by synonymy of *Silvanus trivialis* Grouvelle, type by monotypy].

Diagnosis. Members of this genus most resemble those of *Silvanus* and can be distinguished by the following combination of character states: different form of anterior pronotal angles, which are located posterior to anterior margin of pronotum, and femoral lines open.

Taxonomic notes. Grouvelle (1912a:340) described this as a subgenus for *trivialis*; Halstead (1973:81) raised it to generic rank.

Biology. Primarily subcortical in habitat.

Distribution. Restricted to the New World, where three species are primarily Neotropical (one is restricted to the Galapagos Islands; one penetrates the Nearctic in the southwestern United Ststes and in Florida), and one is widespread in the Nearctic.

Cathartosilvanus imbellis (LeConte)

(fig. 7, 32, 57)

Silvanus imbellis LeConte 1856:77
Cathartosilvanus imbellis, Halstead 1973:82
?*Silvanus communis* Grouvelle 1878:75; see Halstead 1973:82

Diagnosis. Length 2.5-2.9mm. The following combination of character states distinguish individuals of this species from those of *opaculus*: length, 2.4mm - 2.8mm.; pronotum elongate.

Taxonomic notes. The synonymy of *communis* (Halstead 1973:82) was based on the original description and illustration (Grouvelle 1878:75); Halstead was unable to locate the type, which wss from Brazil. Grouvelle (1912a:373) suggested that Guérin's (1829-44:198) description of *Silvanus* (=*Cathartus*) *quadricollis* applied

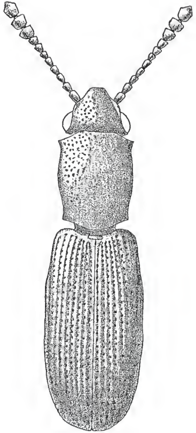


Fig. 7. Cathartosilvanus imbellis (LeConte), habitus. Length 2.3mm - 2.8mm.

best to this species, but this has not been followed by subsequent authors.

Biology. Found almost exclusively under bark, in Florida especially of *Quercus* spp.

Distribution. Halstead (1973:84) reported it from "CANADA: Ontario and Quebec. U.S.A.: Oregon, Nebraska, Iowa, Illinois, Kansas, Texas, Louisiana, Michigan, Indiana, Ohio, New York, Massachusetts, Pennsylvania, W. Virginia, Maryland, New Jersey, N. Carolina, Alabama, Georgia, S. Carolina." I have seen specimens from localities in Florida, Oklahoma, Missouri, New Hampshire, Connecticut, and Wisconsin. If *communis* is a synonym, then this species also ranges into the Neotropics; however, neither Halstead (1973:83) nor I have seen any specimens from south of the United States.

Specimens examined. More than 180, of which 60 were from Florida representing 13 collection records (for complete data see Appendix).

Cathartosilvanus opaculus (LeConte), new combination
Silvanus opaculus LeConte 1856:78
Silvanus trivialis Grouvelle 1878:75, new synonym
Silvanus (*Cathartosilvanus*) *trivialis*, Grouvelle 1912a:340
Cathartosilvanus trivialis, Halstead 1973:84

Diagnosis. Length 1.7mm - 2.1mm. Adults of this species can be distinguished from those of *imbellis* by their smaller size and strongly transverse pronotum.

Taxonomic notes. Halstead (*in litt*. and on determination labels) examined the relevant types and suggested this synonymy.

Biology. Halstead (1973:84) reported the following associations: egg plants, pineapple, bananas, cedar and mahogany logs, *Primavera* log, dried fruit of *Musa textilis*, withered foliage of sugarcane and banana, in nest of weaver bird, and at light. It occasionally is transported on produce, but there are no records (to my knowledge) of it being of economic importance.

Distribution. The type locality of *opaculus* is "Colorado River, California" (LeConte 1856:78). Halstead (1973:84) reported it from Central and South America south to Brazil and Bolivia, as well as from Jamaica, Grenada, Guadeloupe, and St. Vincent in the Caribbean, and from California and Arizona. Thomas (1979) reported it from southern Florida. I have seen specimens from additional localities in Trinidad, U.S. Virgin Islands (St. Croix), and the Dominican Republic. In Florida it has been collected only in Dade County.

Specimens examined. More than 25, of which three were from Florida, representing two collection records (for complete data see Appendix).

Genus Silvanoprus Reitter

Silvanoprus Reitter 1911:45

Type species. Silvanus fagi Guérin-Méneville [by monotypy].

Diagnosis. The following combination of character states will distinguish adults of this genus: tarsomere III lobed; femoral lines closed (fig. 61); anterior angles of pronotum acute (fig. 8).

Taxonomic notes. Reitter (1911:45) described this genus for Silvanus fagi, which does not have produced temples, to distinguish it from other European Silvanus which have temples. Grouvelle (1912a:341) pointed out that the development of the temples is variable in this genus and was not a good character. He wrote that the most consistent character is a lobed tarsomere III. Grouvelle (1912a:341-342) transferred 11 additional species to Silvanoprus and added a new one. He also divided the genus into two groups, a fagi group of seven species in which the notosternal suture of the prothorax ends at the lateral edge of the prothorax near the anterior angles, and a scuticollis group of six species in which the suture attains the anterior margin of the prothorax.

Biology. Horion (1960:162) recorded fagi from various European hardwoods and conifers, and Vogt (1967:92) recorded it from wreaths in cemeteries.

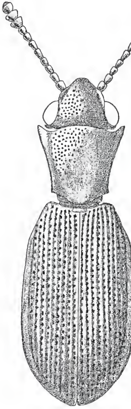


Fig. 8. Silvanoprus scuticollis (Walker), habitus. Length 2.2mm - 2.5mm.

Distribution. Except for one tropicopolitan species (*scuticollis*) and one species introduced into North America (*angusticollis*), this genus is restricted to the Old World.

Silvanoprus scuticollis (Walker)

(fig. 8, 61)

Silvanus scuticollis Walker 1859:53

Silvanoprus scuticollis, Grouvelle 1912a:342

Silvanus triangulus Reitter 1876:60; syn. by Grouvelle 1912a:342

Diagnosis. Length 2.2mm - 2.5mm. The combination of lobed tarsomere III, closed femoral lines (fig. 61), and acute anterior pronotal angles (fig. 8) characterize the adults of this species in the Florida fauna.

Taxonomic notes. This is a distinctive, widespread species with only the one recorded synonym.

Biology. Nothing has been recorded about the biology of this widespread species. Most of the specimens I have seen were collected at ultraviolet light traps. One specimen from St. Croix was collected in an ethanol-baited vane trap. I have never collected it under bark, even in areas which produced specimens from ultraviolet light traps.

Distribution. Hetschko (1930:64) recorded it from East Africa, France, Guyana, Madagascar, East Indies, Ceylon, Malay Archipelago, Japan, Sumatra, Antilles, Grenada, Guadeloupe, and St. Vincent. Thomas (1979:358) recorded it from Florida, Georgia, and North Carolina. I can add the following U.S. localities: Alabama, Louisiana, and Oklahoma. I have also seen specimens from U.S. Virgin Islands (St. Croix), Costa Rica, Taiwan, Dominican Republic, Panama, Brazil, and Jamaica.

Specimens examined. More than 85, of which 43 were from Florida, representing 22 collection records (for complete data see Appendix).

Genus Monanus Sharp

Monanus Sharp 1879:85

Emporius Ganglbauer 1899:578; syn. by Sharp and Scott 1908:429

Type species. Of Monanus, M. crenatus Sharp [by monotypy]; of Emporius, Monotoma concinnula Walker [by synonymy of Silvanus signatus von Frauenfeld, type by monotypy].

Diagnosis. The combination of lobed tarsomere III, closed femoral lines, denticulate, setose pronotal margins, and elytra with transverse dark fascia characterizes this genus in the Florida fauna.

Taxonomic notes. Sharp and Scott (1908:429) synonymized Emporius Ganglbauer with Monanus Sharp. Grouvelle (1912a:344) divided Monanus into two subgenera, Monanus (sens. str.) and M. (Monanops), separating them on the basis of body form, relative length of elytra, and length of metasternum. He listed four species in the subgenus Monanops and 17 in Monanus (sens. str.), of which three are now considered synonyms of *concinnulus*. Recently, Pal (1981) revised the Indian members of the genus, adding a new species of *M.* (*Monanops*), and describing the larva of *concinnulus*. He compared members of this genus with those of *Airaphilus* Redtenbacher, which also is restricted to the Old World.

Biology. Pal (1981:241) reviewed the biology of the species of *Monanus*, citing earlier records of *M. concinnulus* in the roots of *Lonchocarpus* in Peru and in stored grain products in Nigeria, as well as recording Indian species from "...haystack, leaf garbage and under...leaf sheath..."

Distribution. According to Pal (1981:241-242), the genus *Monanus* is "...restricted to warm climatic zones, a few species extend to warm temperate zones but none occur in the cool temperate climate. It is unrepresented in Europe." Only the tropicopolitan *M. concinnulus* occurs in the New world.

Monanus concinnulus (Walker)

(fig. 9)

Monotoma concinnula Walker 1858:207

Monanus concinnulus, Grouvelle 1912a:371

Silvanus signatus von Frauenfeld 1867:438; syn. by Grouvelle 1908b:489

Cryptamorpha fasciatus Wollaston 1873:169; syn. by Waterhouse 1876:122

Cathartus fascipennis Reitter 1878:129; syn. by Ganglbauer 1899:586

Diagnosis. Length 1.9-2.2mm. According to Grouvelle (1912a:370-371) individuals of *concinnulus* can be distinguished from those of other species of *Monanus* by their poorly developed temples, elytra about two times longer than wide, antennomeres IV-VIII quadrate, elytra with transverse fascia.

Taxonomic notes. The wide distribution of this species has resulted in it being described under several names. The synonymy listed above was based on that by Pal (1981:247).

Biology. Little has been published on the biology of this widespread species. I collected specimens on an old, moldy palm frond in Port-au-Prince, Haiti; the only Florida specimens I have seen were collected on *Bambusa vulgaris*. Wolcott (1950:298) reported it from bananas, grapefruit, and pomarrosa (*Eugenia jambos*).

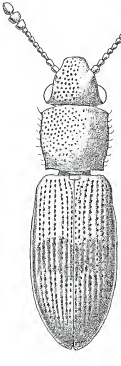


Fig. 9. Monanus concinnulus (Walker), habitus. Length 1.9mm - 2.2mm.

Distribution. Found throughout the warm areas of the world. In the New World it has been recorded (Blackwelder 1945:421) from Mexico, Nicaragua, Puerto Rico, Guadeloupe, St. Vincent, Mustique, and Grenada. I have seen specimens from Taiwan, India, Jamaica, Belize, Panama, U.S. Virgin Islands (St. Croix and St. John), Haiti, and Florida. It is not known whether it is established in Florida.

Specimens examined. More than 55, of which two were from Florida, with the following data: "Coral Gables Fla."/"C.F. Dowling, Jr. coll. 6-III-59"/"at Bambusa vulgaris".

Genus *Ahasverus* Gozis

Ahasverus Gozis 1881:cxxvii

Type species. *Cryptophagus advena* Waltl [by monotypy].

Diagnosis. Members of this genus can be distinguished by the following combination of character states: tarsomere III lobed, lateral margins of pronotum simple, femoral lines open, body ovate, intercoxal process of sternum III rounded anteriorly.

Taxonomic notes. Halstead (*in litt*.) concluded that this is a polyphyletic genus, with *rectus* and related species forming a group deserving of generic status. He is preparing a revision of this group that will clarify the supraspecific relationships.

Biology. Based on literature records and my collecting experience, these are rarely, if ever, found under bark.

Only the biology of _A. advena_ has been studied to any extent, and it seems to be primarily fungivorous, even in stored products.

Distribution. Except for the cosmopolitan stored products pest _A. advena_ (and occasionally _excisus_), members of this genus are restricted to the Nearctic and Neotropical regions. There are three described species in the United States; all occur in Florida.

Key to the adults of Florida species of _Ahasverus_

1. Antennomere XI acuminate apically (fig. 63); anterior pronotal angles strongly lobed; body ovate, strongly convex dorsally......_advena_ (Waltl)

1′. Antennomere XI not acuminate apically (fig. 64); anterior pronotal angles not strongly lobed; body more parallel-sided; not strongly convex.........2

2(1′). Pronotum transverse, at apex clearly wider than at base (fig. 10a).................._rectus_ (LeConte)

2′. Pronotum quadrate, at base slightly broader than at apex (fig. 10c)..........._longulus_ (Blatchley)

Ahasverus advena (Waltl)

(fig. 10b, 63)

Cryptophagus advena Waltl 1834:169
Ahasverus advena, Gozis 1881:cxxvii
Latridius musaeorum Ziegler 1844:270; syn. by Fauvel 1889:132
Silvanus guerini Allibert 1847:12; syn. by Ganglbauer 1899:589
Silvanus angustatus Lucas 1847:221; syn. by Ganglbauer 1899:132
Cryptophagus striatus Rouget 1876:ccvii; syn. by Reitter 1880:86

Diagnosis. Length 1.8-2.2mm. The ovate, convex body shape, produced anterior pronotal angles (fig. 10b), and acuminate antennomere XI (fig. 63) distinguish this species.

Taxonomic notes. Despite the distinctiveness of this species, its wide distribution has led to numerous synonyms. It is most similar to *excisus*, a Neotropical species sometimes also found in stored products and which can be distinguished from *advena* by the very deep emarginations behind the anterior pronotal angles.

Biology. Corbett et al. (1937) studied the biology of this species on copra in Malaya and found that it preferred copra infested with the surface molds *Penicillium glaucum* and *Aspergillus* sp., and they rarely completed development on good copra. "It is practically entirely mycetophagous and, after having consumed the surface moulds, has been observed on several occasions leaving good quality copra" (Corbett et al. 1937:85). Wolcott (1950:298) reported that it had been intercepted in Puerto Rico in lima beans and pigeon peas, as well as being collected in dry pods of _Inga laurina_ and under bark of a dead tree. Smith (1910:262) recorded it in New Jersey as ". . . rare under bark; more common in stored grain, fruit, nuts, etc., particularly such that are spoiled." Brimley (1938:179) reported it in North Carolina from ears of corn. Other records include: Leonard (1928:381) in New York in dried pears from California; Loding (1945:77) in Alabama in cereals; Blatchley (1910:563) in Indiana in ". . . various articles of commerce, especially damp flour, meal, rice, figs, beans, apples, etc."; Hatch (1961:205) "in copra, in coffee beans from Colombia; in flour mills and grain elevators; in aerial trap; in grass pile; in moldy peas and oats; and in sacked grain"; Kirk (1969, 1970) in South Carolina in cured ham, woods trash, corn bin, and stored oats. I have collected it at light and in a pile of decaying soybeans in a mixed hardwood-pine forest.

Distribution. Virtually worldwide in stored products and established in many regions. In the United States it has been recorded from New Jersey (Smith 1910:262), North Carolina (Brimley 1938:179), New York (Leonard 1928:381), Alabama (1945:77), Indiana (Blatchley 1910:563), Washington, Idaho, and Oregon (Hatch 1961:205), South Carolina (Kirk

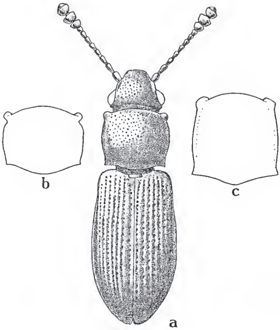


Fig. 10. *Ahasverus* spp. 10a) *A. rectus* (LeConte), hahitus. Length 1.5mm - 1.9mm; 10b) *A. advena* (Waltl), prothorax; 10c) *A. longulus* (Blatchley), prothorax.

1969, 1970), Florida, southern California, and Arizona (Leng 1920:198). I have seen specimens from Florida, Kentucky, Indiana, Iowa, Arizona, Texas, New York, New Hampshire, Vermont, Ontario, Washington, Massachusetts, Ohio, Oklahoma, Kansas, Maryland, Wisconsin, Arkansas, California, Georgia, and Missouri, as well as Cuba and Thailand.

Specimens examined. More than 50, of which which 16 were from Florida, representing 10 collection records (for complete data see Appendix).

Ahasverus longulus (Blatchley)

(fig. 10c)

Cathartus longulus Blatchley 1910:564

Ahasverus longulus, Hetschko 1930:67

Silvanus parviceps Casey 1916:136; syn. by Halstead 1973:40

Diagnosis. Length 2.3-2.5mm. The non-acuminate antennomere XI, anterior pronotal angles not strongly produced, and quadrate pronotum which is slightly broader basally than apically (fig. 10c) distinguish adults of this species.

Taxonomic notes. Except for the original descriptions and the synonymy proposed by Halstead (1973:40) nothing has been published on the taxonomy of this species.

Biology. Blatchley (1910:564) reported that the type(s) had been sifted from the borders of a sphagnum marsh. Nothing else has been published on its biology, but (based on specimens I have examined) it appears to be associated with moist habitats. The single Florida specimen was collected in an ultraviolet light trap.

Distribution. The type locality of *longulus* is Starke Co., Indiana; that of *parviceps* is New York. Thomas (1979:358) recorded it from Florida. I have seen specimens from Florida, Missouri, Ohio, and Ontario.

Specimens examined. Nine, of which one was from Florida with the following data: "FLA., Alachua County Gainesville 4-VII-1978 Coll. M.C. Thomas"/"blacklight trap" (MCTC).

Ahasverus rectus (LeConte)

(fig. 10a, 64)

Silvanus rectus LeConte 1856:78

Ahasverus rectus, Grouvelle 1912a:382

Diagnosis. Length 1.5-1.9mm. Adults of this species are similar in general habitus to those of *longulus* but can be distinguished by their strongly transverse prothorax, which is wider anteriorly than basally.

Taxonomic notes. There are no recorded synonyms for this widespread, common species. The record from Puerto Rico (Wolcott 1950:298) probably refers to *Ahasverus plagiatus* Grouvelle, which is very similar in external structure with *rectus*.

Biology. Little has been recorded on the biology of this species. Loding (1945:77) reported it as "Bred from corn." Kirk (1969, 1970) recorded it from woods trash. It is commonly collected in ultraviolet light traps. I have observed it in Florida around grass tufts on sandy soil, in grass clippings, and under old squares of sod. I have seen numerous specimens, both adults and larvae, from pitfall traps in an orange grove.

Distribution. It ranges throughout the southern United States, west to Arizona, and has been recorded from North Carolina (Brimley 1938:179), Alabama (Loding 1945:77), "Pennsylvania, Illinois and southward." (Blatchley 1910:564), Illinois, District of Columbia, Arizona, and Florida (Leng 1920:199). I have seen specimens from Mexico and the following U.S. states: Georgia, Alabama, Missouri, Arizona, Texas, North Carolina, and Florida.

Specimens examined. More than 250, of which 228 were from Florida representing 83 collection records (for complete data see Appendix).

Genus *Cathartus* Reiche

Cathartus Reiche 1854:77

Type species. *Silvanus quadricollis* Guérin-Méneville [by synonymy of *Cathartus cassiae* Reiche, type by monotypy].

Diagnosis. Members of this genus can be distinguished by the following combination of character states: tarsomere III lobed, pronotal margins simple, femoral lines open, antennomere XI at its broadest narrower than X, intercoxal process of sternum III pointed anteriorly.

Taxonomic notes. Many species, not strictly congeneric with quadricollis, have been assigned at one time or another to this genus. Hetschko (1930:70-71) listed four species, but since the group has never been completely revised it is uncertain if the other species, one each from Australia, New Guinea, and Central America, are properly assigned. Cathartus quadricollis, at least, seems to be most closely related to those of Ahasverus.

Biology. Only the biology of Cathartus quadricollis, a cosmopolitan stored products pest, has been reported. It seems to be especially associated with corn, both stored and in the field, and in the wild, pods of Tamarindus indica, in which I collected numerous specimens in southern Dade County, Florida. Wolcott (1950:298) reported it "in abundance" in tamarind pods in Puerto Rico. On several occasions I have also collected it from under the bark of Quercus spp. It is often taken in ultraviolet light traps. Ganglbauer (1899:588) reported specimens in Germany from Havana cigars and from Cassia fistula. Kirk (1969, 1970) reported it from corn in the field, in corn bin, corn mill trash, pea-vine bay, and on plum foliage. Loding (1945:77) reported it from corn meal. Aitken (1975:127) reported it from maize, cocoa beans, and copra residue, and as a field pest of corn in Nigeria and Jamaica.

Distribution. Cathartus quadricollis is almost cosmopolitan in distribution. The other three species currently assigned to *Cathartus* were described from New Guinea, Australia, and Honduras.

Cathartus quadricollis Guérin-Méneville

(fig. 11, 62)

Silvanus quadricollis Guérin-Méneville 1829-44:198
Cathartus quadricollis, Ganglbauer 1899:587-588
Cathartus cassiae Reiche 1854:78; syn. by Ganglbauer 1899:587
Silvanus gemellatus Jacquelin du Val 1857:104; syn. by Ganglbauer 1899:588

Diagnosis. Length 2.1-3.2mm. The characters given in this section under the genus will distinguish individuals of this species in Florida.

Taxonomic notes. The identity of this species was disputed for many years, primarily because of the great sexual dimorphism it exhibits and the fact that Guérin's type of *quadricollis* has been lost. Ganglbauer (1899:587-588) proposed the above synonymy, which was adopted by Hetschko (1930) for his world catalogue and by most modern authorities. Grouvelle (1912a:373) accepted the synonymy of *cassiae* with *gemellatus* but argued that Guérin's description of *quadricollis* actually applied to LeConte's *Silvanus* (=*Cathartosilvanus*) *imbellis*.

Biology. See this section under the genus.

Distribution. Hetschko (1930:70) recorded it merely as cosmopolitan. Aitken (1975:127) recorded specimens

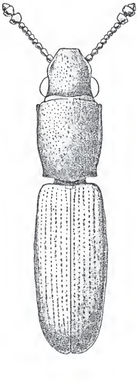


Fig. 11. Cathartus quadricollis Guérin-Mèneville, habitus. Length 2.1mm - 3.2mm

originating in Mexico, Ghana, Ivory Coast, Nigeria, and Borneo, as well as Jamaica and Alabama. He suggested that it is native to the southeastern United States. Sharp (1899:559) recorded it from Mexico, Guatemala, Nicaragua, Panama, and Cuba. Wolcott (1950:298) reported it from Puerto Rico. Casey (1884:73) recorded it from Florida, Georgia, and New York. Loding (1945:77) from Alabama; Blatchley (1910:563) from Pennsylvania and Georgia; Hatch (1961:205) from Washington and Oregon; Leonard (1928:381) from New York; Kirk (1969, 1970) from South Carolina. I have seen specimens from Argentina, Bahamas, Bolivia, Brazil, British Honduras, Dominican Republic, Ghana, Jamaica, Mexico, Panama, Trinidad, and, from the United States: North Carolina, Florida, Texas, California, and District of Columbia. In Florida it ranges throughout the state.

Specimens examined. More than 170, of which 103 were from Florida, representing 31 collection records (for complete data see Appendix).

PASSANDRIDAE

Diagnosis. Members of this family can be distinguished by the following combination of character states: genae produced anteriorly as rounded plates which conceal maxillae; gular sutures confluent; aedeagus inverted, with articulated parameres; tarsal formula 5-5-5 in both sexes; dorsal surface of head and prothorax with system of lines and grooves as in Laemophloeidae; elytra with system of elytra cells or remnants thereof; hind wing venation well-developed.

Larval diagnosis. Body hypergastric, swollen; head and abdominal segment IX small; mouthparts reduced, articulations not evident on maxilla or labium; antennae short, inconspicuous, not articulated; legs short, stout; spiracles annular; urogomphi short, hook-like.

Taxonomic notes. This group is composed of genera long recognized as distinct, although it usually has been treated as a subfamily of Cucujidae. However, Crowson (1955:102) recognized its distinctiveness and raised it to family rank. Thomas (1984a:78) considered that Passandridae is more closely related to Laemophloeidae than to Cucujidae and included it in a monophyletic lineage including also Propalticidae and Phalacridae. Hetschko (1930) listed eight genera (in three subfamilies of the Cucujidae) and 114 species. The largest genus is *Ancistria* Erichson, with 32 species. Lefkovitch (1963a) reviewed the African species of *Hectarthrum* Newman and added a new species. Slipinski (1983) synonymized *Hectarthrum* with *Passandra* Dalman, described three new African species, proposed three species groups, and recognized 17 species from Africa and Madagascar. Other important works on this family include Grouvelle (1912b, 1916b) and Newman (1839).

Biology. Larvae of these beetles are unusual because they seem to be exclusively ectoparasites on other wood-inhabiting insects, especially pupae of Cerambycidae. Dimmock (1884) and Fiske (1905) reported on the habits of the North American *Catogenus rufus*, and Gravely (1916) reported similar habits for *Hectarthrum* (=*Passandra*) *trigeminum* (Newman).

Distribution. Worldwide except for the Palaearctic and New Zealand. The genus *Passandra* is found in all faunal regions in which the family occurs, except for the Nearctic; *Ancistria*, *Laemotmetus*, and *Passandrella* are restricted to the Old World; *Scalidia* is restricted to the Nearctic and Neotropical regions, and *Catogenus* occurs in the Nearctic, Neotropical, and Ethiopian regions.

Genus Catogenus Westwood

Catogenus Westwood 1835:221

Anisoceras Westwood 1835:222; syn. by Newman 1839:396

Type species. Of Catogenus, Cucujus rufus Fabricius [by original designation]; of Anisoceras Westwood, not designated [see section on taxonomic notes below].

Diagnosis. The following combination of character states will distinguish adults of this genus from those of other passandrid genera: antennae with 11 antennomeres; head with deep transverse basal groove (fig. 12); elytra with fully developed elytra cells (fig. 12); pronotum without lateral lines (fig. 12); tarsomere I shorter than tibial spur (fig. 41); body form in most species dorsoventrally compressed (fig. 12).

Taxonomic notes. Both Gemminger and Harold (1868:869) and Hetschko (1930:92) credit Hope (1840:131) with authorship of Anisoceras. However, Hope merely listed included the name in a list of trogositid [sic] genera and their "typical species." Westwood (1835:222) included Anisoceras in his discussion of passandrid genera and included a very brief description, although he credited the name to Hope (apparently a manuscript name). Westwood included no species in Anisoceras. Hope (1840:131) listed "An. carinatus Westwood" as the "typical species." However, there appears to have been no such name proposed by Westwood, although Newman (1839:397) described a Catogenus carinatus (and synonymized Anisoceras Westwood with Catogenus Westwood). Newman's species was based on a specimen supplied by Hope, thus all this nomenclatural confusion seemingly surrounds a single specimen. To compound the confusion, Hetschko (1930:92) listed the name Anisoceras Gemminger and Harold also as a synonym of Catogenus. Gemminger and Harold (1868:869) proposed no such name; they merely listed Anisoceras Hope [sic] as a synonym of Catogenus. Hetschko (1930:92-93) listed 19 species in this genus. At the generic level there has been little taxonomic confusion except that discussed above, but adults of the species are extremely similar externally and difficult to distinguish. That, and the great variation in size exhibited by most species, has led to considerable taxonomic confusion over the identity of the species found in tbe United States.

Biology. Dimmock (1884:341-342) reported rearing Catogenus rufus from a pupa of the cerambycid Elaphidionoides parallelum. He first noticed a small larva on the cerambycid pupa in early March; the larva fed until May 20, when it pupated, and emerged around July 1. He could not determine if the larva had hatched from an egg laid within the cerambycid. Fiske (1905:90-92) gave a similar account on a species of Goes, and also reported Catogenus rufus emerging from the cocoons of the parasite Bracon dorsatus Say. The larva of Catogenus rufus has not been described, but it is probably similar to those described for

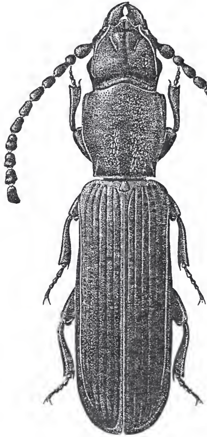


Fig. 12. Catogenus rufus (Fabricius), habitus. Length 5.3mm - 12.3mm.

Scalidia linearis (LeConte) (Bøving and Craighead 1930:35, pl. 33) and Passandra trigeminum (Newman) (Gravely 1916:151, pl.22).

Distribution. All but three of the described species are Neotropical; one is Nearctic, one is African, and one is Asian.

Catogenus rufus (Fabricius)

(fig. 12, 41)

Cucujus rufus Fabricius 1798:123

Catogenus rufus, Westwood 1835:221

Catogenus puncticollis Newman 1839:399; syn. by Casey 1884:106

Catogenus monilicornis Casey 1916:115, new synonym

Catogenus parvus Casey 1916:116, new synonym

Catogenus puncticeps Casey 1916:116, new synonym

Diagnosis. Length 5.3mm - 12.3mm. The generic character states will distinguish individuals of this species from those of Scalidia, the only other Nearctic passandrid genus.

Taxonomic notes. LeConte (1856:73) suggested the synonymy of Newman's (1839:399) species with rufus, but Casey (1884:106) seems to have been the first to formally propose it. Casey's (1916:115-117) species have been treated as varieties of rufus (Hetschko 1930:93; Leng 1920:199); they are here treated as synonyms of rufus on the advice of

Slipinski (in litt.), who is revising the genus and who has examined most of the specimens recorded in this study.

Biology. Discussed in this section under the genus.

Distribution. Casey (1884:75) recorded it from Pennsylvania, District of Columbia, Arizona, and Nebraska, and (1916:115-116) from Iowa, Maryland, and Florida. The type locality of *C. monilicornis* is Lake Worth, Fla. *C. puncticeps* was described from Pennsylvania and District of Columbia, and *C. parvus* from Indiana. *C. rufus* has been recorded from New Jersey (Smith 1910:263), North Carolina (Brimley 1938:179), New York (Leonard, 1928:381), Alabama (Loding 1945:78), Indiana (Blatchley 1910:565), South Carolina (Kirk 1969, 1970). I have seen specimens from Florida, Georgia, Indiana, Louisiana, Missouri, New York, North Carolina, Ohio, and Ontario.

Specimens examined. More than 100, of which 74 were from Florida, representing 38 collection records (for complete data see Appendix).

Genus *Scalidia* Erichson

Scalidia Erichson 1846:305

Taphroscelidia Crotch 1873:44; syn. by Grouvelle 1878:263

Syssitos Sharp 1899:541; syn. by Grouvelle 1916:24

Type species. See discussion in section on taxonomic notes.

Diagnosis. From other passandrid genera, members of this genus can be distinguished by the following combination of character states: antennae with 11 antennomeres; head without deep impressed basal line (fig. 13); tarsomere I about same length as tibial spur (fig. 40); body subcylindrical (fig. 13).

Taxonomic notes. Like several other cucujid genera, *Scalidia* was described by Ericbson (1846:305) without any included species, a situation that has led to subsequent confusion. *Catogenus linearis* LeConte has been considered the type species of *Scalidia* since Grouvelle (1879:263) transferred it to *Scalidia*. However, Lacordaire (1854:397) redescribed the genus and briefly described the species *cylindricollis* from Brazil, listed but not described by Dejean (1837:340) as *Passandra cylindricollis*. In his world catalog Hetschko (1930:91-92) listed 16 species but included *cylindricollis* in *Catogenus*, even though it was the first described species of *Scalidia*. According to Slipinski (*in litt*.) *cylindricollis* is a species of *Catogenus*, thus making *Scalidia* Erichson a junior synonym of *Catogenus*. *Taphroscelidia* Crotch would then become the name for the genus now known as *Scalidia*. Since Slipinski is involved in revising the world Passandridae and has said that he will petition the International Commission to conserve *Scalidia* Erichson, I am reluctant to make any nomenclatural changes.

Biology. Nothing has been reported on the biology of the species of this genus except for some notes on *linearis* (see below). Presumably the larvae are ectoparasites of wood-inhabiting insects, possibly of Scolytidae.

Distribution. All described species are restricted to the New World; only one species is found in the United States.

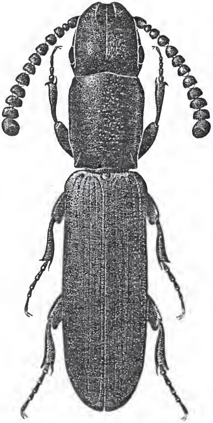


Fig. 13. Scalidia linearis (LeConte), habitus. Length 4.4mm - 7.1mm.

Scalidia linearis (LeConte)

(fig. 13, 40)

Catogenus linearis LeConte 1863:70

Scalidia linearis, Grouvelle 1879:263

Diagnosis. Length 4.4mm - 7.1mm. The characters given in the generic diagnosis will distinguish individuals of this species in Florida.

Taxonomic notes. Like *Catogenus rufus*, individuals range greatly in size, presumably due to the differing nutritional resources available from their hosts. There are no recorded synonyms, but the differences between species in this genus are slight, and there may be undetected synonymy among the Neotropical species described by Sharp and Grouvelle.

Biology. Little has been published on its biology, except for a report by Schwarz (1890b:165) on a specimen in the galleries of the scolytid *Pityophthorus concentralis* Eichhoff and (Schwarz 1890a:94) in poisonwood. The morphology of the larva, illustrated by Bøving and Craighead (1930:pl. 33), suggests that it has habits similar to those of *Catogenus rufus*.

Distribution. The type locality is Mexico, Baja California, and it has been reported (Hetschko 1930:91) from Florida, California (apparently an erroneus reference to the type locality), Texas, Cuba, and Brazil. I have seen specimens from Florida, Texas, Illinois, and the Bahamas (Andros Is.)

Specimens examined. More than 30, of which 22 were from Florida, representing 11 collection records (for complete data see Appendix).

LAEMOPHLOEIDAE

Diagnosis. From all other Cucujoidea, the members of this family can be distinguished by the sublateral lines (composed of either grooves or carinae or a combination of the two) of the head and pronotum, by the possession of elytral cells (reduced or absent in some taxa), and by the inverted aedeagus with parameres reduced to tooth-like processes fused to the basal piece.

Taxonomic notes. This taxon is usually treated as a subfamily (along with Cucujinae) of the family Cucujidae. However, Thomas (1984a) showed that it forms a monophyletic lineage with the Passandridae, Propalticidae, and Phalacridae. Since I have been unable to identify any uniquely derived characters shared by the laemophloeines and the cucujines, I am here elevating the Laemophloeinae to family rank. In addition to the characters discussed previously (Thomas 1984a), the internal mandibular structure is shared by laemophloeids, phalacrids, and propalticids, thus providing another uniquely derived character state for this lineage. Sen Gupta and Crowson (1969:589) and Crowson (in litt.) maintain that the mandibular structure in these taxa is homologous with the mandibular mycangium found in Silvanidae, etc. I do not think that this has been conclusively proved; however, even if it is homologous it is certainly derived relative to the condition of the structure found in Silvanids and thus is still evidence of the monophyletic nature of the passandrid-propalticid-phalacrid-laemophloeid lineage.

Biology. Little has been published on the biology of the non-economic laemophloeines, except that they are subcortical in habitat and probably are predaceous, although this is doubtful in many cases.

Distribution. This family is represented in all forested areas of the world, but reaches its greatest diversity in the tropics.

Genus Lathropus Erichson

Lathropus Erichson 1846:327

Type species. Trogosita? sepicola Muller [by original designation].

Diagnosis. This is one of the most distinct and easily characterized of laemophloeine genera. The combination of lateral lines on head absent, elytral cells absent, and mesocoxal cavities closed laterally by the sterna are diagnostic for this genus.

Taxonomic notes. It is easily defined and has not generally been confused with other laemophloeine taxa. Its affinities are with a group of genera including Microlaemus Lefkovitch, Carinophloeus Lefkovitch, Rhabdophloeus Sharp, Lepidophloeus Thomas, and Odontophloeus Thomas (Thomas 1984d). Hetschko (1930:44-45) listed 12 species in this genus, but the three Australian species apparently belong to Microlaemus Lefkovitch. There are several undescribed Neotropical species, and the genus is badly in need of revision.

Biology. Lefkovitch (1959a:99) recorded the European L. sepicola from ". . . the galleries of Scolytus multistriatus (Marsh.), Pteleobius vittatus (F.) and P. kraatzi Eich. under elm bark." Nothing has been recorded concerning the biology of the United States species. I have collected several specimens of vernalis in Florida under bark scales of scolytid-infested pine branches.

Distribution. There is only one species recorded from outside the New World. Within the New World, members of Lathropus range from southern Canada to Brazil and throughout the Greater and Lesser Antilles.

Lathropus pictus Schwarz

(fig. 14)

Lathropus pictus Schwarz 1878:358

Lathropus costatus Grouvelle 1902:763, new synonym

Diagnosis. Length 1.0mm - 1.4mm. The pale body with maculate elytra (fig. 14) distinguishes adults of this species from those of all other described species of Lathropus.

Taxonomic notes. Schwarz′ species was described from four specimens (Schwarz 1878:359). I have examined a single specimen from the type series with the following data: "type

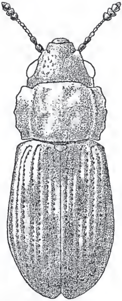


Fig. 14. Lathropus pictus Schwarz, habitus. Length 1.0mm - 1.4mm.

Schwarz"/ "Haulover 4.3 Fla"/"Coll Hubbard & Schwarz"/"Type No. 4508 U.S.N.M." I here designate this specimen as lectotype.

I have examined a male specimen in the MNHN with the following data: "Guadeloupe Vitrac [?]"/"MUSEUM PARIS COLL. A. GROUVELLE 1917"/"TYPE"/ "Lathropus costatus Grouv Ty". Grouvelle (1902:763) apparently described this species from a single specimen, but did not explicitly state so. Therefore, I designate the specimen above as lectotype. It is conspecific with the lectotype of _pictus_.

Biology. Schwarz (1878:359) wrote, ". . . found under bark of a dead Quercus virens." Virtually all the specimens I have seen were collected in ultraviolet light traps.

Distribution. Recorded from Guadeloupe ("Pas de localité précise." [Grouvelle 1902:764]); Mexico (Sharp 1899:531), and Florida. I have seen specimens from Florida and the U.S. Virgin Islands (St. Croix).

Specimens examined. More than 60, of which 46 were from Florida, representing 14 collection records (for complete data see Appendix).

Lathropus vernalis Casey

Lathropus vernalis Casey 1884:95

Diagnosis. Length 1.2mm - 1.5mm. The dark overall body color and immaculate elytra distinguish adults of this species in Florida.

Taxonomic notes. LeConte (1866:379) reported the occurrence of *Lathropus* in North America, based on specimens collected in Washington, D.C. and California, but did not describe any species. LeConte (*in* Zimmermann 1869:257) pointed out that Zimmermann had used *vernalis* as a manuscript name, but that the species was still undescribed. Nevertheless, Crotch (1873:45) used the name, crediting it to LeConte, and Hubbard and Schwarz (1878:634, 652) listed "*Lathropus vernalis* Lec." in their work on the Coleoptera of Michigan. Casey (1884:95) used the name again in connection with a detailed description. This was the first time that *vernalis* had been used validly and thus Casey is the actual author of *Lathropus vernalis*, a fact to which he called attention (Casey 1916:118). All previous uses are *nomina nuda*. Despite this, Leng (1920:200) and Hetschko (1930:45) cited LeConte (1866:379) as the author of *vernalis*.

Because of the nomenclatural confusion surrounding this species its exact identity is in doubt. Casey (1884:95) was unaware that he was providing the first description of this species and did not furnish any information on the specimens he examined. It will be difficult to identify specimens which he used in drawing up his description, although it is likely that he had access to some, if not all, of Leconte's specimens. In the MCZ are eight specimens of *Lathropus* standing under a LeConte label reading "Lathropus vernalis Zim." The specimen bearing the identification label also bears a label reading "Md.", as do two others, and cannot be the specimen mentioned by LeConte (1866:379). Two specimens bear the label "Detroit June"; one, the label "Tyngs Mass"; and one, "D.C.", which is probably the specimen mentioned by LeConte (1866:379). A single specimen bears a gold disc and a label reading "656."; it is probably the holotype of *Lathropus pubescens* Casey (1884:96). Except for the California specimen, all are conspecific and also appear to be conspecific with the holotype of *Lathropus striatus* Casey (1916:120), described from Detroit, Mich.

Because of the problems discussed above, there is probably more than one species represented by the specimens listed in the Appendix; there is certainly more than one phenotype present in Florida. However, I am treating all these specimens as belonging to *vernalis* and am not proposing either any new species or new synonyms pending a thorough revision of this most difficult genus.

Biology. Smith (1910) recorded that it had been collected by beating dead branches, and Loding (1945) reported it from a dead fig limb. I have collected specimens in ultraviolet light traps and under the outer bark scales of dead pine branches infested with scolytids.

Distribution. As mentioned above, it has been recorded from Washington, D.C. (LeConte 1866:379) and Michigan (Hubbard and Schwarz 1878:634, 652). Casey (1884:96) recorded it from "Atlantic and Mississippi regions." Other records are for New Jersey (Smith 1910); and Alabama (Loding 1945). I have seen specimens from Florida, Oklahoma, Indiana, and Ontario.

Specimens examined. More than 80, of which 34 were from Florida, representing 20 collection records (for complete data see Appendix).

Genus Rhabdophloeus Sharp

Rhabdophloeus Sharp 1899:531

Type species. Laemophloeus costatus Grouvelle [here designated, see below].

Taxonomic notes. Sharp (1899:531) included three new species in this genus: Rhabdophloeus concolor Sharp, Rhabdophloeus dispar Sharp, Rhabdophloeus chiriquensis Sharp, and transferred Laemophloeus costatus Grouvelle into it. I here select the latter as type species of Rhabdophloeus. Hetschko (1930:45) listed six species in this genus. Two additional species are here transferred from Cryptolestes (see discussion below) but, judging from descriptions of Reitter and Grouvelle species, there are at least several others that probably should be assigned. The genus is badly in need of revision.

Biology. Nothing has been published on their biology. Florida specimens of Rhabdophloeus horni were collected under the bark of gumbo limbo (Bursera simaruba (L.) Sarg.). I have seen many specimens of Neotropical species collected in ultraviolet light traps.

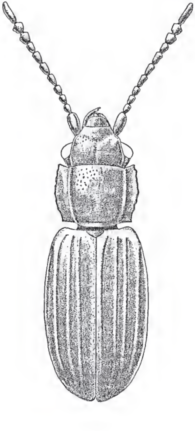


Fig. 15. Rhabdophloeus horni (Casey), habitus. Length 1.5mm - 2.0mm.

Distribution. Recorded in the United States from California and Texas. I have also seen specimens from Arizona and Florida, as well as from Central and South America south to Argentina. I have not seen any representatives of this genus from the Antilles.

Rhabdophloeus horni (Casey), new combination

(fig. 15)

Laemophloeus horni Casey 1884:89

Cryptolestes horni, Casey 1916:133

Diagnosis. Length 1.5mm - 2.0mm. The combination of costate elytra (fig. 15), carinate sublateral lines of the pronotum, narrowly rounded intercoxal process of sternum III, and lack of transverse epistomal groove distinguish this species from all others of the Florida fauna.

Taxonomic notes. Casey (1916:133) transferred this species to Cryptolestes and wrote that it and Cryptolestes disseptus, "...form a distinct subgeneric group of Cryptolestes." Both species are here transferred to Rhabdophloeus. I have examined specimens of both species from the Casey Collection in the USNM and consider the Florida specimens to be conspecific with horni. However, the species of this genus are very similar externally and specific identifications must remain tentative at this point.

Biology. The Florida specimens reported in Appendix were collected under the bark of gumbo limbo (Bursera simaruba (L.) Sarg.) and at light. Nothing else is known about the biology of this species.

Distribution. Casey (1884:89) described it from California, and later (1916:133) reported an additional specimen from Ventura Co., Calif. I have seen specimens from Arizona and Florida. In Florida, it occurs only in the extreme southern part of the state. Because of the taxonomic state of the species in this genus it is uncertain what the distribution of this species is in the Neotropics, but it is probably widespread.

Specimens examined. Fifteen, of which six were from Florida, representing four collection records (for complete data, see Appendix).

Genus Cryptolestes Ganglbauer

Leptus Thomson 1863:92 (not Latreille, 1896; not Duftschmid, 1825)

Cryptolestes Ganglbauer 1899:608 (not Tate, 1934; not Novacek, 1976)

Fractophloeus Kessel 1921:28

Type species. Of Cryptolestes, Cucujus ferrugineus Stephens [by subsequent designation of Casey (1916)]; of Fractophloeus, Laemophloeus fractipennis Motschulsky [by subsequent designation of Lefkovitch (1959a)].

Diagnosis. The combination of the following character states is diagnostic for this genus: epistomal suture not marked with transverse groove; labrum rounded anteriorly;

mandible with additional tooth between apical teeth and prostheca; sublateral lines of pronotum carinulate; anterior coxal cavities closed or nearly closed posteriorly; intercoxal process of prothorax more or less truncate or emarginate; metasternal suture not attaining anterior edge of sclerite; intercoxal process of sternum III broadly rounded anteriorly; elytra with three complete cells; body dorsoventrally compressed.

Taxonomic notes. This is perhaps the taxonomically best-known genus of the family because of the economic importance as stored products pests of several species. However, there are problems remaining to be solved. Of the genera most closely allied to Cryptolestes, Planolestes Lefkovitch seems to be adequately defined and distinct, but Microbrontes Reitter poses some problems. According to Lefkovitch (1958b), Microbrontes is ". . . well differentiated from Cryptolestes and from other Laemophloeinae..." Yet, my examination of the type species of Microbrontes, M. laemophloeoides Reitter, has failed to reveal any differences of apparent generic importance between it and Cryptolestes uncicornis (Reitter) or C. punctatus (LeConte). C. uncicornis was described as a Microbrontes but Lefkovitch (1958b) assigned it to Cryptolestes, noting that it ". . . possesses the distinguishing features of Cryptolestes . . ." Neither Microbrontes laemophloeoides nor Cryptolestes uncicornis or

C. punctatus possess the accessory genital sclerites that occur in males of all other known species of Cryptolestes. However, an undescribed species from Argentina (clearly related to uncicornis and punctatus) possesses a single genital sclerite, while several other undescribed Neotropical species that otherwise are perfectly "good" Cryptolestes also lack genital sclerites. Clearly much more work needs to be done in Cryptolestes and related genera to adequately delineate the characters that define the generic groupings. It is certainly premature to begin splitting up Cryptolestes into subgenera, as Iablokoff-Khnzorian (1977) has done, when the limits of the genus as a whole are still unclear. Lefkovitch arranged the economic species in groups based on patterns of sexual dimorphism and humidity requirements (1965b) and their predilection towards predation, cocoon characteristics and resistance to methyl bromide fumigation (1965a).

The taxonomy and identification of the stored products species of Cryptolestes have been the subjects of numerous papers, among which are: Banks (1979); Biege and Partida (1976); Green (1979); Iablokoff-Khnzorian (1978); Lefkovitch (1959a, 1962c); Reid (1942a). The economic species of Cryptolestes are rarely captured in the "wild" in Florida; five cosmopolitan species that have been recorded from, or which are likely to occur in, stored products in Florida are illustrated and included in the key to species, but are not dealt with further here.

Biology. As with their taxonomy, the biology of the stored products species of *Cryptolestes* has been intensively investigated and is among the best-known of the Coleoptera. For further details on the biology and ecology of those species, see Ashby (1961); Barker and Johnson (1968); Barnes and Kaloostian (1940); Bishop (1959); Borden et al. (1979); Corbett et al. (1937); Currie (1967); Davies (1949); Dolinski and Loschiavo (1973); Dyte (1961, 1966); Finlayson (1950a, 1950b); Freeman (1952, 1962); Gupta and Sinha (1960); Howe (1943); Lefkovitch and Currie (1967); Lefkovitch and Milne (1963); Lefkovitch (1959b, 1962b, 1962d, 1962e); Loschiavo and Sinha (1966); Lucas and Oxley (1946); Payne (1946); Rilett (1949); Sinha (1961, 1965); Sinha et al. (1962); Smith (1962, 1965, 1966, 1972); Surtees (1963, 1964, 1965); Tuff and Telford (1964); Watters (1969); Williams (1954); Wojcik (1969).

The biology of the non-economic species of *Cryptolestes* is almost completely unknown, except that, like most laemophloeines, they occur under bark of hardwood logs and are apparently fungivorous (although Lefkovitch 1965a reported that *C. capensis* and *C. ferrugineus* are ". . . actively though not exclusively predatory . . .").

In some species of *Cryptolestes* the last larval instar spins a silken cocoon in which to pupate (Roberts and Rilett

1953). They are unique among Coleoptera because the silk is produced from epidermal glands on the prosternum.

Distribution. Four species of Cryptolestes, ferrugineus (Stephens), turcicus (Grouvelle), pusillus (Schonherr), and pusilloides (Steel and Howe), are important stored products pests of nearly worldwide distribution (Howe and Lefkovitch 1957). Three others, capensis (Waltl), ugandae Steel and Howe, and klapperichi Lefkovitch, are also known from stored products but are of more limited distribution. Cryptolestes capensis occurs in the countries bordering the Mediterranean (Howe and Lefkovitch 1957). Laemophloeus rotundicollis Casey, described from South Carolina, was synonymized with capensis by Lefkovitch (1967); I have not seen any North American specimens of capensis during this study. Cryptolestes ugandae is restricted to Central Africa (Lefkovitch 1962c). Cryptolestes klapperichi was described in 1962 from Afghanistan (Lefkovitch 1962a) and shortly thereafter was recorded from Arabia (Lefkovitch 1965b). Less than 15 years later, Green (1979) recorded klapperichi in stored products from Sri Lanka and Malaysia. I have seen a long series of specimens of this species collected from the ascomycete fungus Daldinia concentrica on a dead citrus tree in the Virgin Islands. This is the first record of klapperichi from the New World.

In addition to the economically important species mentioned above, there are six species recorded from Europe

(Lefkovitch 1959a); eight from Africa (Lefkovitch 1962c); two from Mauritius and Reunion (Lefkovitch 1964a); two from Arabia (Lefkovitch 1965b); and four are recorded here from the United States. I have seen numerous undescribed species from the Neotropics, as well as specimens of unidentified species from Hawaii, Australia and the New Guinea area.

Key to tbe adults of the Florida species of Cryptolestes

1. Pronotum witb a secondary line between sublateral line and lateral margin (fig. 17, 18)...........2

1´. Pronotum without a secondary line between sublateral line and lateral margin..............3

2(1). Secondary sublateral line diverging posteriorly from sublateral line and attaining basal angle (fig. 18); male antennal scape without apical process (fig. 18); male genitalia as in fig. 67...punctatus (LeConte)

2´. Secondary sublateral line paralleling sublateral line and becoming obsolete at about midpoint of pronotum (fig. 17); male antennal scape with hook-shaped apical process (fig. 17); male genitalia as in fig. 68...................uncicornis (Reitter)

3(1´). Basal angles of pronotum absent...capensis (Waltl)

3´. Basal angles of pronotum present................4

4(3′). First and second elytral cells enclosing four rows of setae..5

4′. First and second elytral cells enclosing three rows of setae....................................6

5(4). Males with mandibles expanded laterally; pronotum strongly constricted posteriorly in males; accessory sclerite of internal sac as in fig. 69; sclerotization of bursa in female as in fig. 70... ....ferrugineus (Stephan)

5′. Males without mandibles expanded laterally; pronotum not strongly constricted posteriorly in males; accessory sclerite of internal sac as in fig. 71; sclerotization of bursa in female as in fig. 72......................pusillus (Schonherr)

6(4′). Mandibles of males expanded laterally; accessory sclerite of internal sac as in fig. 73; sclerotization of bursa in female as in fig. 74... ....klapperichi Lefkovitch

6′. Mandibles of males not expanded laterally........7

7(6′). Dorsal surface of head and prothorax coarsely punctate, more so laterally where punctures are two or more times the diameter of an eye facet, almost contiguous and tending to form longitudinal furrows; antennae moniliform; male genitalia as in fig. 75.................................n. sp. 1

7′. Punctation of dorsal surface of head and prothorax not as above, punctures laterally not almost contiguous nor forming longitudinal furrows; antennae filiform or moniliform.........8

8(7′). Accessory sclerites of internal sac as in fig. 76; sclerotization of bursa in female as in fig. 77... ....turcicus (Grouvelle)

8′. Accessory sclerites of internal sac and sclerotization of bursa not as above............9

9(8′). Accessory sclerites of internal sac as in fig. 78; sclerotization of bursa in female as in fig. 79... ....pusilloides (Steel and Howe)

9′. Accessory sclerites of internal sac as in fig. 80; sclerotization of bursa in female as in fig. 81... ....n. sp. 2

Cryptolestes n.sp. 1

(fig. 75)

Diagnosis. The male genitalia (fig. 75) and the pubescent, coarsely punctate dorsal surface of the head and prothorax are diagnostic for the adult males of this species. The female is unknown.

Description. Length 1.35mm. Dark testaceous, legs paler; body slender and parallel-sided.

Head. Transverse (1:1.6); epistome produced anteriorly, excavate, almost foveate, at basal angles; truncate over labrum; lateral line represented by a ridge and associated groove; disc of head coarsely punctate, with coarse, conspicuous, mostly recumbent, pale pubescence, setae medially on frons suberect; punctures medially about diameter of an eye facet, separated by 1-2 diameters, laterally more than twice the diameter of an eye facet, almost contiguous and tending to form longitudinal furrows; median longitudinal line from vertex to anterior margin of epistome conspicuous; antennae short, barely attaining base of prothorax; scape and pedicel robust, antennomeres III-VIII moniliform, antennomeres IX-XI wider and longer than preceeding antennomeres.

Thorax. Transverse (1:1.1), broadest just behind rounded anterior angles; moderately constricted posteriorly; posterior angles produced, right; surface sculpture and pubescence as head; elytra 1.75 times longer than broad and 1.53 times combined lengths of head and prothorax; first and second elytal cells enclosing three rows of setae.

Genitalia: male as in fig. 75; female unknown.

Variation. The single male paratype is very similar to the holotype, differing most notably in length, 1.3mm, and the ratios of the elytra, which are 1.43 times the combined lengths of head and prothorax and 1.64 times longer than wide.

Types. Holotype male in FSCA with following label data: "FLORIDA: Highlands Co., Highlands Hammock St. Pk. 23-IV-1982 M.C. Thomas". The holotype was collected by beating a

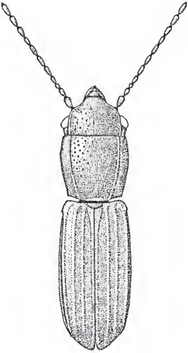


Fig. 16. Cryptolestes n.sp. 2, habitus. Length 1.2mm to 1.4mm.

dead branch of a live oak (*Quercus virginiana* L.). One paratype, in FSCA, with following data: "GA. Clarke Co. Whitehall Forest emerged 20 Feb. 1975 R. Turnbow".

Cryptolestes n.sp. 2

(fig. 16, 80, 81)

Diagnosis. The male genitalia (fig. 80) and sclerotization of the bursa in the female (fig. 81) are diagnostic.

Description. Length 1.5mm. Testaceous, legs paler; body slender and parallel-sided.

Head. Transverse (1:1.57); epistome produced anteriorly, truncate over labrum; lateral line represented by a slight ridge and associated groove; punctures medially much smaller than an eye facet, separated by three or more times their diameter, each subtending an erect pale seta, laterally punctures about diameter of eye facet, separated by 1-2 diameters; surface between punctures smooth and glossy; antennae short, robust; antennomere III much shorter than II, III-VIII subequal in length; IX-XI forming distinct club.

Thorax. Pronotum slightly transverse (1:1.09); surface sculpture and punctation as on head; sublateral line represented by a ridge bordered by a slight groove; elytra 1.8 times longer than wide, parallel-sided, apices evenly rounded to suture.

Genitalia: male as in fig. 80; sclerotization of bursa in female as in fig. 81.

Variation. Paratypes range in length from 1.27mm to 1.43mm. Ratio of length of head to width ranges from 1:1.67 to 1:1.9; that of prothorax is constant in paratypes at 1:1; elytra range from 1.9 times to 2.16 times longer than wide.

Types. Holotype male (FSCA) with the following data: "FLA:Dixie County, 3.5mi. N. Old Town Rt. 349, 21-V-78 R.E. Woodruff and S.A. Fragoso blacklight trap"; paratypes, 3, with following data: 1, same as holotype; 1, FLA:Dixie County, 3.5mi. N. Old Town Rt. 349 13-I-1980 M.C. Thomas"; 1, same, except collector is H.S. Dybas. Paratypes are deposited in FSCA and MCTC.

Cryptolestes uncicornis (Reitter), new status

(fig. 17, 68)

Microbrontes uncicornis Reitter 1876:45

Cryptolestes uncicornis, Lefkovitch 1958b:93

Laemophloeus recticollis Reitter 1876:52; syn. by Lefkovitch 1958b:93

Laemophloeus denticornis Casey 1884:94; syn. by Lefkovitch 1958b:93

Laemophloeus iteratus Sharp 1899:528;syn. by Lefkovitch 1958b:93

Laemophloeus addendus Sharp 1899:529; syn. by Lefkovitch 1958b:93

Laemophloeus quadratus Casey 1884:90, new synonym

Cryptolestes punctatus, sensu Lefkovitch 1958b:93, not LeConte 1856

Diagnosis. Length 1.3mm - 1.8mm. Although confused in collections and by Lefkovitch (1958b:93) with punctatus, uncicornis differs from that species in male antennal characters, male genitalia, and pronotal characters in both sexes. Major males of uncicornis (fig. 17) are easily recognized by the elongate and sinuate antennal scape which besrs at its apex a hook-shaped process. The scape of major males of punctatus (fig. 18) is not sinuate and does not bear an apical process. Both the aedeagus and armature of the internal sac (fig. 68) of uncicornis differ considerably from the corresponding structures in punctatus (fig. 67).

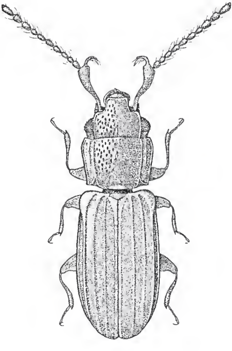


Fig. 17. Cryptolestes uncicornis (Reitter), habitus. Length 1.3mm - 1.8mm.

The secondary sublateral line of the pronotum in punctatus attains the anterior pronotal margin, diverges posteriorly from the sublateral line and attains the basal angle. In uncicornis the secondary sublateral line attains the anterior margin, parallels the sublateral line to about the midpoint of the prothorax and then becomes obsolete.

Taxonomic notes. As can be seen from the synonymy above, this is a variable species that has been described a number of times. The sexual dimorphism and allometric development in antennal and head structure has not only led to a number of synonyms but also confusion witb punctatus, with which uncicornis was incorrectly synonymized by Lefkovitch (1958b:93). The type specimens of uncicornis, recticollis, iteratus and addendus were examined by Lefkovitch (1958b:100) and will not be dealt with further here. Since Lefkovitch examined the types of the species described by European authors, I accept his synonymies. However, he did not examine the type of punctatus; had he done so he probably would not have synonymized uncicornis under it.

Casey (1884:90) described quadratus from an unstated number of specimens from the "Gulf States." In the Casey Collection in the USNM are three specimens standing under the name quadratus with the following data: 1, "Crescent City, Fla"/"Coll Hubbard & Schwarz"/"L. quadratus Casey" (mss.)/"Cryptolestes quadratus Cas." (mss.); 1, "Columbus

24-6 Texas"/"Coll Hubbard & Schwarz"; 1, "Selma Ala"/"Coll Hubbard & Schwarz". All are conspecific with uncicornis. Although Casey did not state the number of specimens in the type series, the locality given indicates that more than one specimen was present. However, the description mentions no variation in structure or length. The first listed specimen, a female, agrees well with Casey's description and is here selected as lectotype. Whetber the other two specimens can be considered syntypes is problematical.

There are three specimens of denticornis in the Casey Collection from Texas, tbe type locality, but they cannot be considered as representing the types. L.L. Buchanan, in two notes pinned with the specimens, wrote: "denticornis was described from 2 Texas (males) coll. by Schwarz. The 3 Casey ex. are labelled Tex =(Houston) & probably coll. by Casey. In the Nat. Museum coll. is a specimen from `Selma, Ala.' labeled denticornis Csy in Casey's handwriting and labeled `cotype.' The location of the real types is unknown."; and "It is possible that the 2 ex. of disseptus Csy are the original set of denticornis". One of the specimens now in the Casey Collection bears a label applied by Buchanan (Lindroth 1975) designating it as neotype; the designation has no nomenclatural stsnding. I have examined one of the specimens of Cryptolestes disseptus Casey (1916:133) mentioned by Buchanan (in litt., above); as noted under Rhabdophloeus, it properly belongs to that genus.

Biology. Little is known about its biology. I have collected it under the bark of hardwood logs, especially *Quercus* spp., in Florida, and it is often collected in ultraviolet light traps throughout its extensive range.

Distribution. Reitter (1876:45) described *uncicornis* from Surinam and Cuba, and *recticollis* (1876:52) from Colombia. Sharp (1899:528) described *iteratus* from Mexico, British Honduras, Guatemala, and Colombia, and *addendus* (1899:529) from Guatemala. Casey's species were described from the southern United States. This is one of the most commonly collected and widespread species of Laemophloeinae in the New World, ranging from the Gulf of Mexico states of the United States south to Argentina and Paraguay and throughout the Greater and Lesser Antilles. I have examined specimens from Florida, Louisiana, Mississippi, and Texas in the United States, as well as from Mexico, Guatemala, El Salvador, Costa Rica, Panama, Cuba, Jamaica, Puerto Rico, U.S. Virgin Islands, Guadeloupe, Trinidad, Colombia, Surinam, Ecuador, Bolivia, Peru, Brazil, Argentina, and Paraguay. In Florida, it has been collected only in the northern half of the state.

Specimens examined. More than 700, of which 47 were from Florida, representing 15 collection records (for complete data, see Appendix).

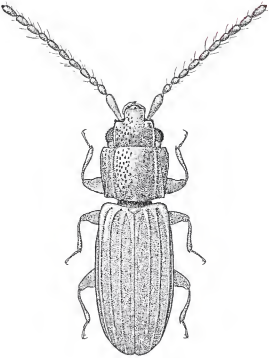


Fig. 18. Cryptolestes punctatus (LeConte), habitus. Length 1.4mm - 1.8mm.

Cryptolestes punctatus (LeConte)

(fig. 18, 67)

Laemophloeus punctatus LeConte 1856:75

Cryptolestes punctatus, Lefkovitch 1958:93

Laemophloeus geminatus LeConte 1856:75; syn. by Casey 1884:108

Laemophloeus extricatus Casey 1884:92, new synonym

Cryptolestes adumbratus Casey 1916:134, new synonym

Diagnosis. Length 1.4mm - 1.8mm. It superficially is very similar to uncicornis; characters useful in distinguishing adults of the two species are given in the diagnosis under that species.

Taxonomic notes. LeConte (1856:75) described punctatus from a single male with the following data: [orange disc, indicating Southern States]/"1248" [pencil on brown paper]/"Type 6791"/"L. punctatus Lec." (MCZC). LeConte (1856:75) described geminatus from an unstated number of specimens from "Louisiana and Georgia." I have examined a single female in the MCZC bearing the following data: [orange disc, indicating Southern States]/"Type 6792"/"L. geminatus Lec." I here select this specimen as lectotype. It is conspecific with punctatus. There are two specimens of adumbratus glued to a single point in the USNM with the following data: "Borden 18.6 Tex"/"CASEY bequest 1925"/"TYPE USNM 49165"/"adumbratus 2 PARATYPE 49165"/"adumbratus Csy." [Casey´s mss.]. I here select tbe specimen on the left as lectotype. Both are conspecific with punctatus. Casey (1884:92) described extricatus from a single specimen with the following data: "Mo."/"CASEY bequest 1925"/"TYPE USNM 49163"/"extricatus Csy." [Casey′s mss.]. It is conspecific with punctatus.

Biology. Little is known about the biology of this species. Like uncicornis it occurs beneath the bark of hardwoods, especially Quercus spp., and is collected in ultraviolet light traps.

Distribution. It has been recorded from South Carolina, District of Columbia, Georgia, Indiana, and Louisiana (Leng 1920); New York (Leonard 1928); Alabama (Loding 1945); Indiana (Blatchley 1910); Illinois (Park 1929), and South Carolina (Kirk 1969, 1970). The record for the Virgin Islands (Miskimen and Bond 1970) is for uncicornis (I have seen the voucher specimen upon which this record was based). I have seen specimens of punctatus from Florida, Delaware, Indiana, Illinois, Iowa, Louisiana, Mississippi, North Carolina, South Carolina, Texas, snd Oklahoma. In Florida it has been collected only in the northern half of the state.

Specimens examined. More than 150, of which 130 were from Florida representing 23 collection records (for complete data, see Appendix).

Genus Dysmerus Casey

Dysmerus Casey 1884:97

Dasymerus, Grouvelle 1908a:56 [misspelling]

Brontophloeus Kessel 1921:28; syn. by Lefkovitch 1958b:97

Type species. Of Dysmerus, D. basalis Casey (by monotypy); of Brontophloeus, Dysmerus basalis Casey (by subsequent designation of Lefkovitch (1958b)).

Diagnosis. The species of this genus resemble those of both Cryptolestes and Leptophloeus; from the former they can be distinguished by their narrow intercoxal process of abdominal sternum III, and from the latter by the curiously modified antennal scape in the male and the lateral attachment of the pedicel to the scape in both sexes.

Taxonomic notes. This genus was described by Casey for the single U.S. species, D. basalis; later, Grouvelle (1908a) added the Antillean species Dasymerus [sic] sulcicollis. Lefkovitch (1958b) synonymized both D. sulcicollis and Laemophloeus caseyi Grouvelle (1898) under D. basalis. I accept his conclusion that Grouvelle's species are conspecific, since he examined the types of both. However, I have compared the type specimen of D. caseyi with specimens of D. basalis and conclude that D. caseyi is a valid species not especially closely related to D. basalis. Dysmerus caseyi (Grouvelle) is here revived as a valid species.

Schwarz (1890a) considered Dysmerus at most as a subgenus of Laemophloeus. Lefkovitch (1958b) pointed out the close resemblance of *Dysmerus* to *Leptophloeus*, and wrote, "Upon a female specimen alone, it is likely that Casey . . . would have included *Dysmerus* in his genus *Leptophloeus*. But since the adaptive radiation of this latter genus is not yet fully known, and since *Dysmerus* appears to be quite distinct from it as at present understood, I consider that *Dysmerus* should be kept as a valid genus." Presently, species with modified scapes in the male are assigned to *Dysmerus*, while those without modified scapes in the male are assigned to *Leptophloeus*. Obviously, this is an arbitrary and unsatisfactory situation, but will not be remedied until both genera are thoroughly revised.

Biology. Schwarz (1890a, 1890b) recorded *D. basalis* from the burrows of several species of Scolytidae. There is no other published information on their biology. Adults are sometimes collected in ultraviolet light traps. The function of the modified antennal scape in the male is unknown.

Distribution. As presently defined this genus appears to be exclusively New World; the only two described species are from the southern United States and the Lesser Antilles. I have seen about six undescribed species from Central and South America and one from the southeastern U.S.

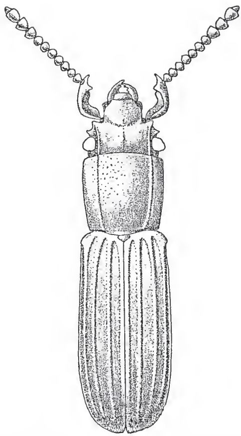


Fig. 19. Dysmerus basalis Casey, habitus. Length 1.6mm - 1.8mm.

Dysmerus basalis Casey

(fig. 20)

Dysmerus basalis Casey 1884:97

Dasymerus [sic] sulcicollis Grouvelle 1908a:56; synonymized incorrectly witb basalis by Lefkovitch 1958b:97

Laemophloeus caseyi Grouvelle 1898:42; synonymized incorrectly by Lefkovitch 1958b:97

Diagnosis. Length 1.6mm - 1.8mm. The modified antennal scape (fig. 20) in the male and lateral attachment of the pedicel to the scape in both sexes will serve to distinguish it from all other described Florida species.

Taxonomic notes. Although Lefkovitch (1958b) confused this species with D. caseyi (Grouvelle), it is an easily recognized species with no other recorded synonyns.

Biology. The only information on its biology comes from Schwarz (1890a, 1890b), who recorded it from Liquidambar styraciflua (L.) infested with Pityophthorus annectens LeConte, Rhus toxicodendron infested with P. consimilis LeConte, and from poisonwood infested with an undescribed species of Pityophthorus. I have seen several specimens reared from poisonwood. Adults are sometimes caught in ultraviolet light traps.

Distribution. Casey (1884) described basalis from a single specimen collected in Florida by Schwarz. Later, Schwarz (1890) recorded it from the Florida localities of Key Biscayne (Dade Co.) and Haw Creek (Alachua Co.), as well as from Washington, D.C. It is rarely collected and very uncommon in collections. I have seen specimens from Florida and Alabama; it probably ranges throughout the southern United States.

Specimens examined. Fifteen, of which nine were from Florida, representing three collection records (for complete data, see Appendix).

Genus *Leptophloeus* Casey

Leptophloeus Casey 1916:119, 135

Truncatophloeus Kessel 1921:28; syn. by Lefkovitch 1959a:104

Type species. Of *Leptophloeus*, *Laemophloeus angustulus* LeConte (by original designation); of *Truncatophloeus*, *Laemophloeus mobilis* Grouvelle [by subsequent designation of Lefkovitch 1962c].

Diagnosis. Members of this genus resemble tbose of *Cryptolestes* but can be distinguished by their usually more elongate and more cylindrical body form and narrow intercoxal process of sternum III. From members of *Dysmerus* Casey, those of *Leptophloeus* can be recognized by the normal antennal scape in the male and more elongate body form. From adults of *Narthecius*, which also are subcylindrical in body form, those of *Leptophloeus* can be distinguished by their truncate rather than acuminate epistome.

Taxonomic notes. Casey (1916:119, 135) described this genus for *Laemophloeus angustulus* and included also the European *L. perrisi* Grouvelle. Considered at most a subgenus of *Laemophloeus* by most authors, *Leptophloeus* was treated as a valid genus by Lefkovitch (1959a, 1962c) and is so treated here. However, Iablokoff-Khnzorian (1978) considered it a subgenus of *Cryptolestes*. Although the type species of *Leptophloeus*, *Cryptolestes*, and *Dysmerus* are distinctive and certainly appear to represent separate genera, other species bridge many of the gaps. Lefkovitch (1962c) grouped three African species into a species group distinct from other *Leptophloeus* because of their variously modified epistome and 5-5-4 tarsal formula in the males. However, *L. angustulus* has 5-5-4 tarsi in the male also and would thus appear to belong to Lefkovitch's *problematicus* species group. Illustrative of the problem of determining generic limits is an undescribed species from the western U.S., which in most characters greatly resembles *Cryptolestes ferrugineus* but would have to be assigned to *Leptophloeus* because of the narrow intercoxal process of sternum III.

Biology. Lefkovitch (1959a) recorded several European species as being predaceous on scolytid larvae. Schedl (1962) recorded seven African species from the galleries of various species of Scolytidae. Schwarz (1890a) recorded *L. angustulus* in *Rhus toxicodendron* infested with *Pityophthorus consimilis* LeConte.

Distribution. Lefkovitch (1959a) recorded six species of this genus from Europe, including one African species sometimes found in stored products, and (Lefkovitch 1962c)

16 species from Africa. In addition to the type species, L. angustulus, the European L. alternans (Erichson) is also recorded from the U.S. (LeConte 1869, Casey 1884, Hatch 1961). However, Casey (1916:132) noted of the records of the latter species, ". . . I also have strong doubts concerning the occurrence of the European alternans Er., in this country and believe some allied native species has been mistaken for it." Specimens I have seen that agree with the description and illustration of alternans in Hatch (1961) represent an undescribed species, and I believe the records for alternans are based on misidentifications of this species. I have seen at least two other undescribed species of Leptophloeus from the western United States. There are no species of Leptophloeus recorded from the Neotropics or outside of Europe and Africa in the Old World. I have seen a specimen of an undescribed species from Argentina, as well as other species apparently referrable to Leptophloeus from Australia.

Leptophloeus angustulus LeConte

(fig. 19, 54)

Laemophloeus angustulus LeConte 1866:379

Leptophloeus angustulus, Casey 1916:119

Diagnosis. Length 1.6mm - 2.0mm. Characters useful for distinguishing this species are given under the diagnosis of Dysmerus basalis Casey.

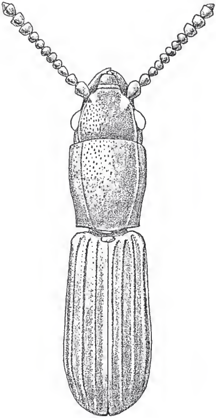


Fig. 20. Leptophloeus angustulus (LeConte), habitus. Length 1.6mm - 2.0mm.

Taxonomic notes. Little has been published on it besides the original description, although DeLeon (1934) confused an undescribed species from the western United States with this species. A female from Florida, Marion Co., Ocala, has more convex eyes than other specimens and may represent an undescribed species.

Biology. The biological notes published by DeLeon (1934) apparently refer to an undescribed species rather than angustulus, which was pointed out by Chamberlin (1939), who, however, mistakenly identified that species as Leptophloeus alternans, a European species that apparently does not occur in the New World. Schwarz (1890a) recorded specimens of L. angustulus from Rhus toxicodendron infested with Pityophthorus consimilis LeConte. I have seen specimens with the label data: "under bark of scarlet oak"; "reared from oak"; and "ex galleries of scolytid in bark of dead scarlet oak".

Distribution. LeConte (1866) described this species from Washington, D.C. Casey (1884) added Colorado (although this record may refer also to the undescribed species discussed above) and Schwarz (1890a) also recorded it from Washington, D.C. I have seen specimens from Florida, Ohio, and Missouri.

Specimens examined. Twenty-five, of which three were from Florida, representing three collection records (for complete data see Appendix).

Genus *Narthecius* LeConte

Narthecius LeConte 1861:95

Paraphloeus Sharp 1899:509; syn. by Lefkovitch 1962c:210

Type species. Of *Narthecius*, *Laemophloeus grandiceps* LeConte (by subsequent monotypy); of *Paraphloeus*, *Paraphloeus crassiceps* Sharp (by original designation).

Diagnosis. The acuminate epistome (fig. 55) makes adults of the species of this genus among the most easily recognized of Florida laemophloeines.

Taxonomic notes. Little has been published on the New World members of this genus except for the original descriptions. Lefkovitch (1962c) distinguished the New World species from those described from the Orient and suggested that a group of species, related to *N. suturalis* Grouvelle, are generically distinct from the other members of the genus.

Biology. Like the other genera of Laemophloeinae with subcylindrical adults, the species of *Narthecius* seem to be predaceous on Scolytidae and are found almost exclusively within their burrows. Schwarz (1890a) recorded collecting *Narthecius grandiceps* from twigs of *Liquidambar styraciflua* (L.) infested with *Pityophthoruse consimilis* LeConte. Schedl (1962) recorded the African *N. schedli* Lefkovitch from the galleries of five species of Scolytidae.

Distribution. Hetschko (1930) listed 10 species of this genus and two of *Paraphloeus* Sharp (which was synonymized with Narthecius by Lefkovitch [1962c]) from North and Central America, Madagascar and the Orient. Since then, Lefkovitch (1962c) added one species from Africa and Hatch (1961) added another from the Pacific Northwest. There are six described species in the United States (one is here considered a synonym of N. grandiceps, see below), all but one of which are confined to the western part of the country.

Narthecius grandiceps LeConte

(fig. 21)

Narthecius grandiceps LeConte 1863:70

Narthecius breviceps Casey 1890:323, new synonym

Diagnosis. Length 1.8mm - 2.0mm. The acuminate epistome and longitudinally strigose head (fig. 21) characterize this species in the Florida fauna.

Taxonomic notes. LeConte (1863) described it from a single specimen from York Co., Pennsylvania. Casey (1884) wrote, "This curious species is of such excessive rarity that as far as my knowledge extends, only three specimens are known in the collections of the United States . . . ." Casey's redescription of this species was based on a Nevada specimen, which likely belongs to a species other than grandiceps. I have examined the holotype of Narthecius breviceps Casey, described from Haw Creek, Florida, and consider it conspecific with grandiceps. Casey (1890) was mistaken in reporting the epistomal process of this specimen

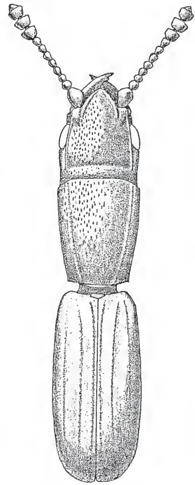


Fig. 21. Narthecius grandiceps (LeConte), habitus. Length 1.8mm - 2.0mm.

as simply acuminate; it is distinctly bifid, as in *grandiceps*.

Biology. Except for Schwarz (1890a) reporting this species from twigs of *Liquidambar styraciflua* (L.) infested with *Pityophthorus consimilis* LeConte, nothing is known about its biology. It is likely that it, like other subcylindrical laemophloeines, is predaceous on scolytids. It is occasionally collected in ultraviolet light traps.

Distribution. It was described from Pennsylvania and, as *breviceps*, from Florida. Except for the type specimens I have seen only specimens from Florida.

Specimens examined. Two, representing two Florida collection records (for complete data, see Appendix).

Genus *Laemophloeus* Dejean

Laemophloeus Dejean 1837:340

Type species. *Cucujus monilis* Fabricius [by subsequent designation of Lefkovitch 1959:101].

Diagnosis. The following combination of character states is diagnostic for this genus: transverse groove marking epistomal suture present (reduced in major males of some species); humeral carinae of elytra present; intercoxal process of sternum III acuminate apically; tarsal formula 5-5-4 in males; tarsomere I shorter thsn penultimate tarsomere.

Taxonomic notes. Most laemophloeines were described in this genus snd many which are not strictly congeneric with

L. monilis are still assigned to it. As restricted by Lefkovitch (1959a), this is a rather small genus confined to the Holarctic and Neotropical regions. It belongs to a group of genera including *Charaphloeus* Casey, *Rhinomalus* Chevrolat, *Rhinophloeus* Sharp, and *Metaxyphloeus* Thomas. All are characterized by their possession of an acuminate intercoxal process of sternum III and well-developed epistomal suture (major males of some species may have the transverse groove representing the suture obliterated by the secondary sexual development of the head).

Biology. Lefkovitch (1959a) recorded *L. monilis* from ". . . the cones of conifers, in the burrows of *Taphrorhychus bicolor* (Herbst) on lime trees and under the bark of dead lime." Iablokoff-Khnzorian (1977) recorded it also from ". . . dead twigs of various deciduous species occupied by various bark beetle species." Lawrence (1977) recorded the North American *L. biguttatus* from an ascomycete fungus. Gut contents of specimens of several species I have examined were fungal spores and hyphae.

Distribution. Members of this genus appear to be restricted to the Holarctic and Neotropical regions. Lefkovitch (1959a) recorded four species from Europe; Iablokoff-Khnzorian (1977) listed a total of six species from the Palaearctic. Ten species are here recorded from the United States. Members of the genus range south to southern South America, but since most Neotropical laemophloeines are still assigned to Laemophloeus (sens. lat.), it is impossible to determine the total number of Neotropical species without a thorough generic revision of the fauna.

Key to the adults of Florida species of Laemophloeus
(Females are difficult to distinguish and are best
identified by association with males.)

1. Antennomeres IX-XI each at least twice length of any preceding antennomere (fig. 23); epiatomal teeth well-developed in large males; pronotum not angulate laterally; color entirely testaceous (extreme southern Florida only)...lecontei Grouvelle

1′. Antennomeres IX-X each much less than twice length of preceding antennomeres, although XI may be elongate; epistomal teeth not well-developed; pronotum angulate laterally at about basal third; body usually bicolored...........................2

2(1′). Antennal scape flattened dorsally and with conspicuous brush of setae in males (fig. 24).................................megacephalus Grouvelle

2′. Antennal scape not flattened dorsally, without brush of setae..................................3

3(2′). Head and pronotum sparsely, finely punctate; antennal scape carinate posteriorly; color testaceous, elytra infuscate along suture and laterally.......................suturalis Reitter

3′. Head and pronotum more densely punctate, punctures separated by about one diameter; antennal scape not carinate; color either not testaceous or elytra not infuscate along suture................4

4(3′). Head and pronotum densely, coarsely punctate; punctures separated by less than one diameter; dorsal surface usually conspicuously pubescent; color usually uniformly piceous (teneral individuals may be reddish brown); each elytron medially with a small, well-defined pale spot (fig. 22)........................_biguttatus_ (Say)

4′. Head and pronotum less densely punctate; punctures separated by at least one diameter; dorsal surface not conspicuously pubescent; color usually not uniformly piceous; elytral maculae not as above...5

5(4′). Scape shorter than length of eye in males; dorsal surface of head and prothorax with punctures about the size of an eye facet, separated mostly by about once their diameter; elytra with well-defined, somewhat triangular maculae (fig. 82); color usually testaceous with infuscate head and pronotum and piceous elytra....._fasciatus_ Haldeman

5′. Scape longer than length of eye in males; dorsal surface of head and prothorax with punctures smaller than an eye facet, separated by 1-2 diameters; elytra with amorphous, pale maculae; color entirely castaneous (fig. 25)........n.sp. 1

Laemophloeus biguttatus (Say)

(fig. 22, 52)

Cucujus biguttatus Say 1827:267

Laemophloeus biguttatus, Smith 1851:5

Laemophloeus bisignatus Guérin-Méneville 1829-44:205; syn. by Smith 1851:5

Diagnosis. Length 1.9mm - 3.3mm. The piceous coloration of most specimens, the small, oval elytral maculae (fig. 22), and the densely punctate dorsal surface will serve to distinguish individuals of this species from those of most other Florida species of Laemophloeus.

Taxonomic notes. Laemophloeus californicus Casey is very similar to this species and may prove to be conspecific. Individuals seem to differ from those of biguttatus only in their consistently paler color. Smith (1851:5) listed bisignatus as a synonym of biguttatus without any discussion; this has been followed in all subsequent literature, except for Melsheimer (1853:44).

Biology. Lawrence (1977) reported adults and larvae and reared larvae on Hypoxylon prob. atropunctatum (Schweinitz ex Fries) Cooke (Ascomycetes: Xylariaceae). He noted that

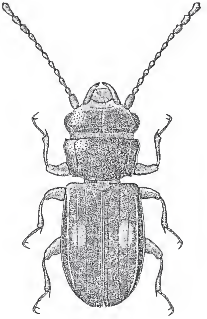


Fig. 22. Laemophloeus biguttatus (Say), habitus. Length 1.9mm - 3.3mm.

gut contents consisted almost entirely of conidia (aaexual spores). I have collected numerous specimens on various acomycete fungi and have found only fungal tissue and spores in their gut.

Distribution. LeConte (1856:74) recorded it from ". . . Middle and Southern States, and aa far west as Nebraska." Casey (1916:123) reported it from ". . . Pennsylvania to Arizona." I have aeen specimens from Alabama, Arizona, Arkansas, British Columbia, California, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachussetts, Michigan, Missouri, New Hampshire, New York, North Carolina, Ohio, Oklahoma, Ontario, Pennsylvania, Quebec, Tennessee, Texas, Utah, Virginia, Washington. It ranges throughout much of peninsular Florida, with records from Lee County north to Okaloosa County in the Panhandle. Records are lacking for the extreme southeastern coast and the Keys.

Specimens examined. More than 580, of which 266 were from Florida, representing 55 collection records (for complete data, see Appendix).

Laemophloeus fasciatua Melsheimer

(fig. 82)

Laemophloeus fasciatus Melsheimer 1846:113

Diagnosis. Length 2.1mm - 3.1mm. The following combination of character states distinguish adults of this species from those of other Florida Laemophloeus: antennal scape shorter than length of eye; punctures of head and pronotum about the diameter of an eye facet, separated by about one diameter; elytra piceous or black, with somewhat triangular shaped pale maculae (fig. 82).

Taxonomic notes. This is a distinctive species with no recorded synonyms.

Biology. Nothing has been recorded on the biology of this species except that is found under bark.

Distribution. I have seen specimens from Connecticut, Delaware, Florida, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Massachussetts, Michigan, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Ontario, Pennsylvania, Tennessee, Texas, Virginia, West Virginia. In Florida it has been collected from Dade County in the south to Okaloosa County in the north.

Specimens examined. More than 60, of which 14 were from Florida, representing 13 collection records (for complete data, see Appendix).

Laemophloeus lecontei Grouvelle

(fig. 23)

Laemophloeus lecontei Grouvelle 1876:496

Diagnosis. Length 2.0mm - 3.5mm. This is one of the most distinctive species of Florida *Laemophloeus*. The combination of elongate antennomeres IX-XI (fig. 23), non-angulate pronotal margins, and well-developed epistomal horns in major males are diagnostic (fig. 23).

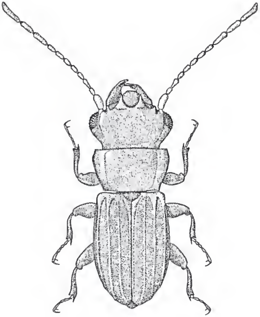


Fig. 23. Laemophloeus lecontei Grouvelle, habitus. Length 2.0mm - 3.5mm.

Taxonomic notes. Virtually nothing has been published on it since its description and the mention by Casey (1884:84). There are no recorded synonyms, but Laemophloeus chevrolati Grouvelle, described from Cuba, is very similar and probably is a synonym.

Biology. Nothing has been recorded on the biology of this species. Several Florida specimens were collected under the bark of a log of gumbo limbo (Bursera simaruba (L.) Sarg.); others were collected in ultraviolet light traps.

Distribution. The type locality is "Amérique boreal" (Grouvelle 1876:496), and it has only been recorded from Florida, where it occurs in the extreme southern part of the state. I have seen specimens of Laemophloeus chevrolati, a probable synonym of lecontei, from Mexico, Jamaica, Trinidad, Costa Rica, and Venezuela.

Specimens examined. Twenty-nine, all from Florida, representing 12 collection records (for complete data, see Appendix).

Laemophloeus megacephalus Grouvelle

(fig. 24)

Laemophloeus megacephalus Grouvelle 1876:495

Laemophloeus floridanus Casey 1884:85, new synonym

Diagnosis. Length 2.3mm - 3.4mm. A tuft of setae on the dorsal surface of the antennal scape in the male (fig. 24) distinguishes this from all other Florida species. Females are indistinguishable from those of suturalis, but

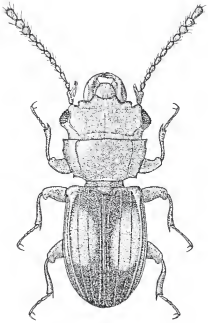


Fig. 24. Laemophloeus megacephalus Grouvelle, habitus. Length 2.3mm - 3.4mm.

(except for the few specimens with reduced elytral maculation which resemble specimens of fasciatus) can be distinguished from other Florida species by the shape and position of the elytral maculae (fig. 24).

Taxonomic notes. Grouvelle (1876:495) described megacephalus from from "Nouvelle-Grenade. Collection Chevrolat." I have examined a single male from the MNHN with the following label data: "Chevrolat. Nlle. Grenada Magdalena"/"S. nom. megacephalus H. Deyrolle."/"Type"/ "TYPE"/ "MUSEUM PARIS COLL. A. GROUVELLE 1917"/"Megacephalus A. Grouv. Ann. Fr. p.". I accept this specimen as part of the type series and designate it as lectotype. The type of floridanus apparently has been lost (Buchanan 1935), but Casey's (1884:85) description is detailed enough to permit its identification. Specimens from the southern U.S. matching Casey's description are conspecific with megacephalus. Laemophloeus distinguendus Sharp, described from Guatemala and Panama, is almost certainly another synonym of megacephalus, but as I have not examined the types I hesitate to propose a formal synonymy at this time. There is a specimen from Jamaica that is very similar to megacephalus but which has an elongate antennomere XI and may represent an undescribed species.

Biology. Nothing has been recorded on the biology of this species. Gut contents of Florida specimens indicate it is fungivorous. Based on my collecting experience in

Florida, it appears that individuals of *L. megacephalus* tend to be more abundant on logs in deep woods rather than in more sunny situations, where individuals of *biguttatus* predominate.

Distribution. Except for the original descriptions and its inclusion in a key by Grouvelle (1896:203), it has been mentioned in the primary literature only once since, when Blatchley (1925:165) recorded it at light at Royal Palm Park (now Royal Palm Hammock in Everglades National Park, Florida). I have seen U.S. specimens from Florida, Alabama, North Carolina, Louisiana, and Texas, as well as from Mexico and Trinidad. I have seen Florida specimens from Dade County in the south to Jackson County in the north; I have not seen any specimens from the Keys.

Specimens examined. More than 260, of which 228 were from Florida, representing 43 collection records (for complete data, see Appendix).

Laemophloeus suturalis Reitter

Laemophloeus suturalis Reitter 1876:50

Laemophloeus suturalis var. *circumdatus* Sharp 1899:514

Diagnosis. Length 1.9mm - 3.0mm. Males are similar to those of *megacephalus* but lack the tuft of setae on the scape and the epistomal emarginations over the antennal insertions are not as deep. Females of *megacephalus* and *suturalis* cannot be distinguished except by association with males.

Taxonomic notes. Except for the variety *circumdatus*, described by Sharp (1899:514) and of doubtful validity, there are no recorded synonyms of this species. Adults of *suturalis* are very similar to adults of *terminalis* Casey, but those of the latter are larger, more brightly colored, and with a relatively much longer antennomere XI in major males.

Biology. Nothing has been recorded on its biology. Most of the Florida specimens were collected on and under the bark of a dead, standing gumbo-limbo tree (*Bursera simarubra* (L.) Sarg.); gut contents consisted of fungal material. Many specimens from Neotropical areas were collected in ultraviolet light traps.

Distribution. Sharp (1899) recorded this species from Mexico, Guatemala, Panama, and Colombia. It has not been previously recorded from the United States; I have seen U.S. specimens only from Florida. I have also seen specimens from Mexico, British Honduras, Bolivia, Costa Rica, Trinidad, and Panama.

Specimens examined. More than 105 (almost entirely males, since females are inseparable at present from those of *megacephalus* and *distinguendus*), of which the following were from Florida: 26, "FLORIDA: Dade County, Castellow Hammock, 17-IV-1982 M.C. Thomas and J.H. Frank"; 1, "FLORIDA: Dade County, Goulds, 18-IV-1982 M.C. Thomas and J.H. Frank".

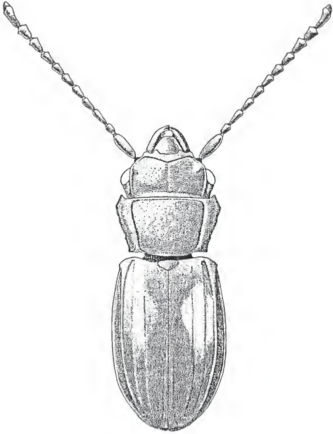


Fig. 25. *Laemophloeus* n. sp., habitus. Length 2.3mm to 2.8mm.

Laemophloeus n.sp. 1

(fig. 25)

Diagnosis. The following combination of character states distinguishes individuals of this species from those of other Florida Laemophloeus: sparsely punctate, glabrous dorsal surface of head and prothorax; antennal scape not flattened dorsally, as long as eye in male; color pale castaneous, sometimes slightly infuscate, with ill-defined paler elytra maculae. Although a difficult character to quantify, the almost flat dorsal surface of head and prothorax contrasts with the slightly convex dorsal surface of the other species of this genus in Florida.

Description. Length 2.7mm. Dorsoventrally compressed, dorsal surface of head almost flat; elongate-oblong; color castaneous, elytra darker, each with a large amorphous pale macula from basal fifth to just past midpoint, attaining lateral carina laterally but not sutural stria.

Head. Transverse (1:2.5), epistome with five emarginations; median line impressed, complete from posterior transverse line to epistomal line; dorsal surface glabrous (at 75x), with punctures smaller than an eye facet, separated by 1-2 diameters, surface smooth and glossy between punctures; antennae elongate, filiform, attaining apical third of elytra; scape elongate, longer than length of eye, not flattened dorsally or posteriorly.

Tborax. Transverse (1:1.8), widest just behind anterior angles; breadth across anterior angles 1.25 times that across basal angles; anterior angles produced, acute; posterior angles produced slightly, obtuse; sublateral line represented by a deep groove; sublateral foveae well-marked; surface sculpture and pubescence as on head; elytra 1.4 times longer than broad; elytra appearing glabrous, but elytral cells enclosing 3-4 rows of minute setae.

Variation. Length of allotype, 2.2mm; proportions as follows: bead, 1:2.4; pronotum, 1:2.2; elytra, 1.41:1. Paratypes range in length from 2.3mm to 2.8mm. The discs of the pronotum and head in some specimens are infuacate.

Types. Holotype male (FSCA), with following data: "FLA: Dixie County, 3.5mi. N. Old Town Rt. 349, 21-V-78 R.E. Woodruff and S.A. Fragoso blacklight trap"; allotype, (FSCA), same data as holotype; paratypes (75), as follows: 8, same data as holotype; 1, "Gainesville, Fla."/"E.M. Collins, Jr. coll. 10-IV-63"/"in blacklight trap" (FSCA); 1, "ONTARIO: Essex Co. Wheatley March 1967 K. Stephan leg." (FSCA); 2, "MISSOURI: Boone Co. Columbia 12 April 1978 Martin E. Rice coll" (FSCA); 1, "TENNESSEE: Oak Ridge 22-VI-68 R.E. Woodruff"/"in blacklight trap" (FSCA); 54, "Brooksville Fla I-21-40"/"Van Dyke Collection"; 4, same except I-28-40; 4, same except I-21-40 (CASC).

Genus Charaphloeus Casey, new status

Charaphloeus Casey 1916:127 [as subgenus of Laemophloeus Dejean]

Type species. Laemophloeus convexulus LeConte [by original designation]

Diagnosis. The combination of the following character states are diagnostic for the members of this genus: body shape generally more convex than in Laemophloeus; pronotum rounded laterally, not angulate (fig. 26); elytra without humeral carinae; elytral cells absent or poorly expressed; intercoxal process of sternum III acuminate anteriorly; tarsomere I as long as or longer than penultimate tarsomere (fig. 83); male tarsal formula 5-5-4 or 5-5-5.

Taxonomic notes. Charaphloeus was described by Casey (1916:127) as a subgenus of Laemophloeus but is here treated as a full genus. Most species are easily assignable to one genus or another; however, adults of Charaphloeus flavosignatus (Schaeffer) possess humeral carinae and are thus intermediate between Charaphloeus and Laemophloeus. Individuals of that species possess all the other distinguishing features of Charaphloeus, and possession of humeral carinae is here considered to be a retention of an ancestral character state.

Biology. Little is known about the biology of the species of Charaphloeus. Blatchley (1910:567) reported that individuals of adustus (probably an undescribed species, see below) are found on beech logs.

Distribution. Restricted to the New World, where the species range from Canada to southern South America and through the Antilles.

Key to the adults of Florida species of Charaphloeus

1. Anterior pronotal angles acutely angulate; males with elongate mandibles, without prominent frontal tubercles; color dark brown to piceous (a single northern Florida record)......convexulus (LeConte)

1′. Anterior pronotal angles obtusely rounded; males with or without elongate mandibles and frontal tubercles; color other than dark brown or piceous. 2

2(1′). Punctures of head and pronotum smaller than an eye facet, separated mostly by about one diameter; color testaceous; males with elongate mandibles and frontal tubercles (fig. 26) (extreme southern Florida only)............bituberculatus (Reitter)

2′. Punctures of head and pronotum larger than an eye facet, nearly contiguous; body usually bicolored, elytra darker than head and pronotum; males without elongate mandibles or frontal tubercles (northern Florida)..............adustus (LeConte)

Charaphloeus adustus (LeConte), new combination

Laemophloeus adustus LeConte 1856:74

Laemophloeus (Charaphloeus) adustus, Casey 1916:126

Laemophloeus (Charaphloeus) fraterculus Casey 1916:124, n. syn.

Diagnosis. Length 1.6mm - 1.9mm. The bicolored body, coarse punctation of head and pronotum, small mandibles, and simple anterior pronotal angles distinguish individuals of this species from those of other Florida Charaphloeus.

Taxonomic notes. I have examined LeConte's type of adustus (type locality, York Co., Penn.) and Casey's type of fraterculus (type locality, Buena Vista Spring, Franklin Co., Penn.), and conclude that they are conspecific. Casey's misidentification of adustus (1884:87) as an even more coarsely punctate, predominantly northern (and apparently undescribed) species with very small, abruptly protuberant eyes, led to his description of fraterculus. The aedeagus of LeConte's male holotype of adustus is very different from those of males of the undescribed species.

Biology. Nothing has been published on the biology of this species except for Blatchley's note (see this section under the genus), which probably refers to the undescribed species.

Distribution. This species has been recorded from Virginia, Indiana, Vancouver, Pennsylvania, and New York (Hetschko 1930:21). Some of these records may refer to the

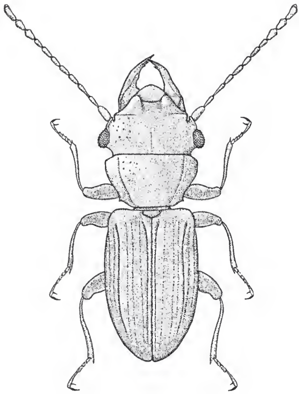


Fig. 26. Charaphloeus bituberculatus (Reitter), habitus.
Length 1.7mm - 2.1mm.

undescribed species discussed above. I have seen specimens from Kentucky, Indiana, Missouri, and Florida.

Specimens examined. Six, of which two were from Florida, representing two collection records (for complete data see Appendix).

Charaphloeus bituberculatus (Reitter), new combination

(fig. 26)

Laemophloeus bituberculatus Reitter 1876:316

Diagnosis. Length 1.7mm - 2.1mm. The following combination of character states is diagnostic for adults of this species: pale yellow color; elongate mandibles and epistomal tubercles (fig. 26) of males.

Taxonomic notes. There are no recorded synonyms of this distinctive species, which possesses the diagnostic characteristics of Charaphloeus, and is here transferred to that genus.

Biology. Nothing has been recorded about its biology.

Distribution. It was described from Puerto Rico and had gone unreported since then until reported from Florida (Thomas 1979). I have seen specimens from Florida, Jamaica, U.S. Virgin Islands (St. Croix), and the Bahamas (Exuma).

Specimens examined. Sixteen, of which eight were from Florida, representing three collection records (for complete data see Appendix).

Charaphloeus convexulus (LeConte), new combination

(fig. 83)

Laemophloeus convexulus LeConte 1879:2

Laemophloeus (*Charaphloeus*) *convexulus*, Casey 1916:126

Laemophloeus (*Charaphloeus*) *filiger* Casey 1916:125, n. syn.

Laemophloeus (*Charaphloeus*) *sphaerops* Casey 1916:126, n. syn.

Diagnosis. Length 1.7mm - 2.4mm. The acutely angulate anterior pronotal angles; elongate mandibles in the male, and piceous coloration characterize adults of this species.

Taxonomic notes. I have examined LeConte's and Casey's types and consider that they are conspecific. Casey's specimens exhibit only the normal intraspecific variation expected in such a strongly sexually dimorphic species that also is subject to allometry.

Biology. Nothing has been recorded on its biology, except that it is found under bark.

Distribution. It has been recorded from New Jersey, Iowa, Michigan, New York (Hetschko 1930:26), Massachusetts and District of Columbia (Casey 1916:126), and South Carolina (Kirk 1969, 1970). I have seen specimens from Ontario, New York, Rhode Island, Pennsylvania, New Hampshire, Oklahoma, and Florida.

Specimens examined. Seventeen, of which one was from Florida, with the following data: "Fla: Marion Co. Ocala Nat. Forest Big Scrub Campground 12 March, 77:Blacklight Coll. D. Platt and E. Riley" (FSCA).

Genus Placonotus Macleay

Placonotus Macleay 1871:168

Silvanophloeus Sharp 1899:537; syn. by Lefkovitch 1959a:110

Type species. Of Placonotus, P. longicornis Macleay (by monotypy); of Silvanophloeus, Laemophloeus testaceus (Fabricius) (by original designation).

Diagnosis. Adults of Placonotus species can be distinguished from those of other laemophloeine genera by the following combination of character states: distinct transverse line separating frons from epistome; anterior coxal cavities narrowly open posteriorly; intercoxal process of first visible abdominal sternite broadly rounded anteriorly; last visible abdominal segment usually exposed dorsally beyond elytral apices; tarsal formula 5-5-5 females, 5-5-4 males; males with genital claspers. This genus is well-defined, and there usually is no problem in identifying its members by habitus alone. However, it is very close to the African Gannes Lefkovitch, which may be synonymous, and with Parandrita LeConte and Horn.

Taxonomic notes. Although described by Macleay in 1871, it was not until Lefkovitch (1959) that Placonotus was accepted as a taxon distinct from Laemophloeus. The genus has been revised for Europe (Lefkovitch 1959), Africa (Lefkovitch 1962c), India (Mukhopadhyay and Sengupta 1977), and the New World (Thomas 1984c). The numerous species in the Oriental and Australian regions are unidentifiable, mostly undescribed, and badly in need of revision.

Distribution. Found throughout the forested areas of the world, but apparently absent from the oceanic islands of the Pacific. Lefkovitch (1959) recorded one species from Europe and (1962c) 13 species from Africa. Mukhopadbyay and Sen Gupta (1977) recorded six species from India and Thomas (1984c) recorded 13 New World species, including two species also occurring in Africa. Of the 13 New World species, six occur in the U.S. Two of those, *P. nitens* (LeConte) and *P. arizonensis* Thomas, are restricted to the western U.S., and two others, *P. politissimus* (Wollaston) and *P. macrognathus* Thomas, are Neotropical species restricted to Florida in the U.S. Of the remaining two U.S. species, *P. zimmermanni* (LeConte) is widespread in the eastern U.S. west to Texas, while *P. modestus* (Say) occupies much of the same range west to Arizona.

Biology. Very little is known about the biology of most species of *Placonotus*. Both Iablokoff-Khnzorian (1977) and Lefkovitch (1959a) recorded the European species, *P. testaceus*, from under bark of various hardwoods and in the galleries of several species of Scolytidae. Lawrence (1977) reported one U.S. species in association with an ascomycete fungus, and I have collected specimens of two species, *P. zimmermanni* and *P. modestus*, commonly under the bark of dead hardwoods, especially *Quercus* spp., on or near ascomycete fungi. The larva of *P. testaceus* has been described and illustrated (Perris 1877), but the description and illustrations are useless for modern taxonomic purposes and apply equally well to the larvae of many laemophloeine genera.

Key to the adults of Florida species of *Placonotus*

1. First visible abdominal segment with femoral lines (fig. 84); anterior pronotal angles rounded, not or little produced anterolaterally; third elytra cell impressed basally; elytra truncate apically, exposing much of last visible abdominal segment... ....*politissimus* (Wollaston)

1′. First visible abdominal segment without femoral lines; anterior pronotal angles various; third elytral cell present or absent; elytra truncate or entire..2

2(1′). Anterior angles of pronotum with prominent anterolaterally directed tooth; elytra entire, evenly rounded to apices; elytra cells present.... ....*zimmermanni* (LeConte)

2′. Anterior angles of pronotum rounded, or declivous to small, blunt tooth; elytra entire or truncate; elytral cells absent...........................3

3(2′). Elytra truncate apically, exposing most of last visible abdominal segment; elytra with conspicuous rows of punctures (fig. 28); head not microreticulate....................modestus (Say)

3′. Elytra not truncate apically, exposing at most the tip of last visible abdominal segment; elytra without conspicuous rows of punctures (fig. 27); head microreticulate...........macrognathus Thomas

Placonotus macrognathus Thomas

(fig. 27)

Placonotus macrognathus Thomas 1984c:12

Diagnosis. Length 1.6mm - 1.8mm. In addition to the key characters, individuals of this species can be distinguished from those of other Florida species of Placonotus by the combination of the following character states: large, distinctly microreticulate head; and laterally expanded mandibles in the male.

Taxonomic notes. This is one of the more distinctive species of the pallentipennis species subgroup (Thomas 1984c) and is not likely to be confused with any other species of Placonotus in the Florida fauna.

Distribution. It is known only from the Florida Keys and Cuba.

Biology. Part of the type series was collected under bark of gumbo limbo (Bursera simaruba (L.) Sarg.) and one

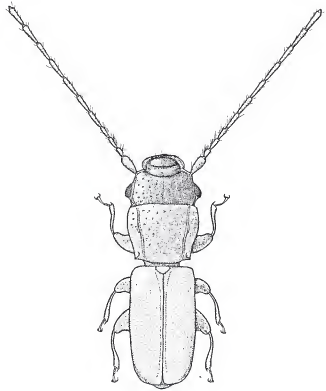


Fig. 27. Placonotus macrognathus Thomas, habitus. Length 1.6mm - 1.8mm.

was collected in an ultraviolet light trap. Nothing else is known about the biology of this species.

Specimens examined. I have seen no additional specimens since it was described from four specimens collected on Upper Key Largo in Monroe County and one Cuban specimen. One other Cuban specimen (not part of the type series) was recorded by Thomas (1984c).

Placonotus modestus (Say)

(fig. 28)

Cucujus modestus Say 1827:268

Laemophloeus modestus, LeConte 1856:75

Silvanophloeus modestus, Casey 1916:130

Placonotus modestus, Thomas 1984c:8

Laemophloeus singularis Smith 1851:7; syn. by LeConte 1856:105

Laemophloeus gundlachi Grouvelle 1876:499; syn. by Thomas 1984c:8

Silvanophloeus gundlachi, Sharp 1899:538

Silvanophloeus liquidus Casey 1916:130; syn. by Thomas 1984c:8

Diagnosis. Length 1.4mm - 2.2mm. The combination of truncate elytral apices exposing most of the last visible abdominal segment and anterior pronotal angles consisting of small, ventrally deflected tubercles (fig. 28) distinguishes adults of this species from those of the other known Florida species of Placonotus.

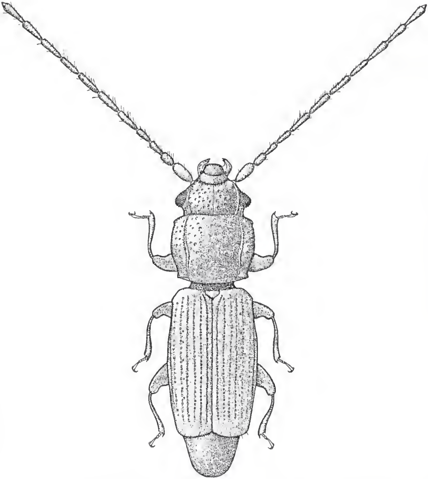


Fig. 28. Placonotus modestus (Say), habitus. Length 1.4mm - 2.2mm.

Taxonomic notes. Say's type material presumably was lost with most of his collection. Because this is one of the most widespread New World species of Placonotus and the one most commonly confused in collections with other species, Thomas (1984c) designated a neotype and provided a detailed redescription of the species. Casey (1916) described liquidus from Texas; gundlachi was described from "Amérique Centrale," and singularis was described from "East Florida."

Biology. Wheeler (1921) reported only two references to the habits of this species, recording it from hemp seed and from "under bark and in siftings." Lawrence (1977) reported an association with an ascomycete fungus in Texas for a species he tentatively identified as P. liquidus. I have collected it on numerous occasions under the bark of hardwoods, especially Quercus spp., usually in association with ascomycete fungi or Fungi Imperfecti. Examination of gut contents suggests that it is fungivorous. It is often collected in ultraviolet light traps.

Distribution. Thomas (1984c) recorded it from Florida north to New York and west to Arizona. It ranges south through Mexico and Central America to Panama and has also been collected in Cuba, Jamaica and Trinidad. Florida records range from Dade County in the South to Taylor County in the North. Although records are lacking for both the Keys and the Panhandle it is likely that it occurs throughout the state.

Specimens examined. More than 500, of which 319 were from Florida representing 67 collection records (for complete data, see Appendix).

Placonotus politissimus (Wollaston)

(fig. 84)

Laemophloeus politissimus Wollaston 1867:67
Placonotus politissimus, Lefkovitch 1962c:183
Laemophloeus (*Silvanophloeus*) *mirus* Grouvelle 1905:142; syn. by Lefkovitch 1962c:183
Laemophloeus commixtus Grouvelle 1912:304; syn. by Thomas 1984c:6
Laemophloeus victus Kessel 1926:69; syn. by Thomas 1984c:6

Diagnosis. Length 1.2mm - 2.0mm. This is the only known species of *Placonotus* with femoral lines (fig. 84) on the first visible abdominal sternite; additionally, the rounded anterior pronotal angles, basally impressed third elytral cell and truncate elytral apices are diagnostic.

Taxonomic notes. Lefkovitch (1962c) examined the type series of *politissimus* and *mirus* and selected lectotypes. Thomas (1984c) examined the holotype of *commixtus* and established the synonymy of that species with *politissimus*. The type (or types) of *victus* have not been identified and the synonymy is based on the description in Kessel's (1926) key. The type locality of *politissimus* is Cape Verde Islands; of *mirus*, Madagascar; of *commixtus*, Guadeloupe, and of *victus*, Brazil.

Distribution. Lefkovitch (1962c) recorded it from "Atlantic islands off Africa, Congo, Ivory Coast, Madagascar, Seychelles." Thomas (1984c) noted additional African records from Zimbabwe and Nigeria, as well as an extensive New World distribution ranging from Florida south through Mexico and Central America to Peru and southern Brazil and throughout the Greater and Lesser Antilles. In Florida it ranges from the Keys north to Marion County.

Biology. Virtually nothing is known about its biology. Grouvelle (1912b) wrote in the original description of *commixtus* that the holotype was collected ". . . under the bark of a freshly fallen *Cedrela odorata*." Almost all of the specimens I have seen were collected in ultraviolet light traps.

Specimens examined. More than 300, of which 45 were from Florida, representing 29 collection records (for complete data see Appendix).

Placonotus zimmermanni (LeConte)

Laemophloeus Zimmermanni LeConte 1856:75

Placonotus zimmermanni, Thomas 1984c:5

Laemophloeus testaceus auctorum, not (Fabricius 1787:168)

Silvanophloeus apertus Casey 1916:128; syn. by Thomas 1984c:5

Silvanophloeus illustris Casey 1916:129; syn. by Thomas 1984c:5

Silvanophloeus sobrinus Casey 1916:129; syn. by Thomas 1984c:5

Diagnosis. Length 1.5mm - 1.9mm. This is the only North American *Placonotus* with conspicuously toothed anterior pronotal angles and well-developed elytral cells.

Taxonomic notes. *P. zimmermanni* was considered conspecific with *P. testaceus* (Fabricius) of Europe (Casey 1884) until recently (Thomas 1984c). Although superficially similar, the two species differ considerably in surface sculpture, pubescence, and in the structure of the male genitalia. I have seen no North American specimens of *P. testaceus*. The type locality of *P. zimmermanni* is "Middle States". Casey described *apertus* from Indiana, *illustris* from "N. Braunfels, Tex." and *sobrinus* from North Carolina.

Distribution. Thomas (1984c) recorded it from Florida north to Ontario and west to Oklahoma and Kansas, with a single record from Oregon. In Florida, it seems to be restricted to the northern half of the state, where it is collected much less commonly than P. modestus.

Biology. Little is known about its biology, except that individuals are found under the bark of hardwood logs, especially those of Quercus spp, and are attracted to light. Examination of gut contents indicate they are fungivorous.

Specimens examined. More than 500, of which 27 were from Florida, representing 27 collection records (for complete data see Appendix).

Genus Parandrita LeConte and Horn

Parandrita LeConte and Horn 1883:133

Type species. Laemophloeus cephalotes LeConte [by original designation].

Diagnosis. Species of this genus are characterized by the large head (fig. 29), epistome foveate at basal angles (fig. 29), and weakly developed elytral epipleuron.

Taxonomic notes. Species of this genus are distinctive and there are no generic synonyms. Species of Parandrita seem to be most closely related to those of Placonotus Macleay and the Florida species treated below could almost have been included in Placonotus as well as Parandrita. Criteria for its assignment to Parandrita are discussed below. The New World species of Parandrita are without an external manifestation of the epistomal suture, while in those of Hawaii the clypeus is set off from the frons by an abrupt change in elevation.

Biology. Nothing has been reported about the biology of the species of this genus.

Distribution. Confined to the New World and Hawaii. It is represented in the New World by four species in California and Central America, and one in Florida and the Antilles. There are six species recorded from the Hawaiian Islands.

Parandrita permixtus (Grouvelle), new combination

(fig. 29)

Laemophloeus permixtus Grouvelle 1912b:303

Diagnosis. Length 1.2mm - 1.5mm. Adults of this species can be distinguished from all other Florida Laemophloeinae by the following combination of character states: closed procoxal cavities; head almost as large as pronotum, with basal angles of epistome foveate. From adults of other described species of *Parandrita*, those of *permixtus* can be distinguished by their elongate and filiform antennae.

Taxonomic notes. Although superficially resembling adults of *Placonotus* species, especially those of the *pallentipennis* species subgroup (see Thomas 1984c), *permixtus* actually belongs in *Parandrita* LeConte and Horn, differing from species previously assigned to that genus by its elongate, filiform antennae. Like other species of *Parandrita*, adult *permixtus* possess a large head, epistomal suture, and foveate basal angles of the epistome. Like other

New World *Parandrita*, the epistomal suture is visible through the cuticle but is not marked by any external structure except for the foveae, which seem to represent the basal angles of the suture and are perhaps remnants of an external groove.

Biology. Nothing has been recorded about its biology. Most specimens I have seen were collected at ultraviolet light traps or in ethanol-baited vane traps. There are two specimens in the USNM that were intercepted at Brownsville, Texas under the bark of mango wood from Cuba.

Distribution. It was described from Guadeloupe and I have seen specimens from Cuba, U.S. Virgin Islands (St. Croix and St. Thomas), and Florida. In Florida, it has been collected only in the extreme southern part of the state.

Specimens examined. More than 30, of which 5 were from Florida, representing four collection records (for complete data see Appendix).

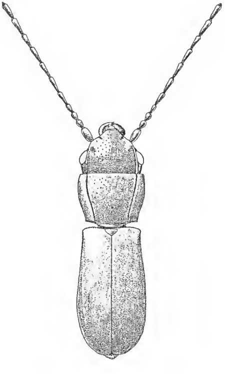


Fig. 29. Parandrita permixtus (Grouvelle), habitus. Length 1.2mm - 1.5mm.

Genus Phloeolaemus Casey, new status

Phloeolaemus Casey, 1916:127 [as subgenus of Laemophloeus]

Type species. Laemophloeus immersus Sharp [by original designation and by monotypy].

Diagnosis. The combination of the following character states is diagnostic for this genus: epistomal suture not marked with transverse groove; mandibles of males often with lateral or ventral tooth; procoxal cavities wide open; sublateral lines of pronotum grooved; oblique impression often present between sublateral line and lateral margin; elytra with only third cell developed; intercoxal process of sternum III broadly rounded anteriorly.

Taxonomic notes. Casey (1916) described Phloeolaemus as a subgenus of Laemophloeus, and it is here raised to generic rank. Its relationships are by no means certain, but Phloeolaemus may be most closely allied to Placonotus and Parandrita, with possible affinities also with the African Mariolaemus Lefkovitch.

Biology. Except for the observation reported under Phloeolaemus chamaeropis nothing is known about the biology of the members of this genus.

Distribution. The type species, P. immersus, is known only from a single specimen collected in Panama at Volcán de Chiriquí. Phloeolaemus chamaeropis occurs in the Gulf States of the United States. Other species, which appear to be

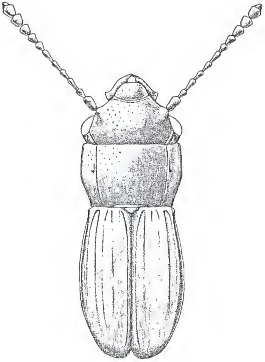


Fig. 30. Phloeolaemus chamaeropis (Schwarz), habitus.
Length 1.7mm - 2.0mm.

Distribution. The type species, P. immersus, is known only from a single specimen collected in Panama at Volcán de Chiriquí. Phloeolaemus chamaeropis occurs in the Gulf States of the United States. Other species, which appear to be related to either P. immersus or P. chamaeropis, occur throughout the Neotropics.

Phloeolaemus chamaeropis (Schwarz), new combination

(fig. 30)

Laemophloeus chamaeropis Schwarz, 1878:127

Diagnosis. Length 1.7mm - 2.0mm. The generic characters will serve to distinguish this species, the only known member of its genus in the United States, from all other Florida laemophloeines.

Taxonomic notes. It is one of many laemophloeines that were described as members of Laemophloeus (sens. lat.)(many of which are still assigned to that genus because of the lack of taxonomic interest in this group in the New World). I have examined the type specimen of Phloeolaemus immersus (Sharp), and consider that chamaeropis is more closely related to that species than to any species of Laemophloeus (sens. str.). There appear to be two major groups of species that would be encompassed by including chamaeropis in the same genus as immersus: a group of species with narrow-bodied adults having unmodified mandibles in the male, but highly complex genital claspers, as in immersus, and a group of species with relatively broad-bodied adults having modified mandibles in the male and sternum VIII not modified as genital claspers in the male, as in chamaeropis. Further study may prove that this latter group is deserving of generic rank but to prevent numerous name changes I will not at this time assign additional species to Phloeolaemus.

Biology. Nothing has been recorded on the biology of this species and the reason for the specific epithet is unknown; I know of no association of it with palmettos. I have collected adults and larvae of this species most commonly on sweet gum (Liquidambar styraciflua L.), especially on freshly downed wood where the sap was still fermenting. I have also collected it on freshly cut oaks (Quercus spp.) which had a strong odor of fermentation about them, and on which the outer surface of the sapwood had not yet turned dark. Adults are occasionally collected in ultraviolet light traps. The function of the laterally expanded mandibles in the male is unknown.

Distribution. No locality was given in the description (Schwarz 1878:359), but it was recorded from Enterprise (Volusia Co.) later in the same paper (Schwarz 1878:446). Casey (1884) recorded it from the "Southern States." I have seen specimens from Florida, Alabama, Louisiana and Texas. In Florida specimens have been collected from Highlands County in the south to Columbia County in the north; it is likely that it occurs throughout the state.

Specimens examined. Thirty-three, of which 26 were from Florida, representing 18 collection records (for complete data, see Appendix).

SUMMARY

Of the 92 species of flat bark beetles known to occur in the United States, 56 species, or well over half of the total, occur in Florida. Eliminating the 17 cosmopolitan and economic species that presumably entered Florida through human agency, gives the state a native fauna of 39 species. Of these, 13 are clearly of Neotropical origin, and in the United States some are found primarily in Florida or in the states bordering the Gulf of Mexico. These include *Eunausibius salutaris* Parsons, *Cathartosilvanus opaculus* (LeConte), *Lathropus pictus* Schwarz, *Rhabdophloeus horni* (Casey), *Cryptolestes uncicornis* (Reitter), etc.

Another component of the Florida fauna consists of species with a primarily northern U.S. distribution, and which barely enter the state in the north. Among these species are *Telephanus velox* (Haldeman), *Charaphloeus adustus* (LeConte), *C. convexulus* (LeConte), and *Placonotus zimmermanni* (LeConte). A fourth component of the state´s flat bark beetle fauna is composed of those Nearctic species with wide distributions throughout the eastern and southern portions of the continent. These include *Silvanus planatus* Germar, *Catbartosilvanus imbellis* (LeConte), *Ahasverus rectus* (LeConte), *Catogenus rufus* (Fabricius), *Cryptolestes punctatus* (LeConte), *Laemophloeus biguttatus* (Say), etc.

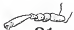
The purely boreal fauna, consisting of such genera as *Uleiota*, *Cucujus*, and *Pediacus*, is not represented at all in the state.

Interestingly, the endemic component, which is so marked in some groups (e.g., Scarabaeidae (Woodruff, 1973), seems to be completely lacking among the flat bark beetles and not one species is known to be endemic to Florida.

The numerous endemic species of Scarabaeidae reported by Woodruff (1973) seem to be restricted for the most part to the fossil sand dunes of the central and north-central part of state and their endemism is probably due to speciation events taking place during the many periods of the Pliocene and Pleistocene when a rising sea level reduced Florida to a series of islands and isolated sand bars.

Even among the phytophagous Cerambycidae, those species which are endemic to Florida also are restricted to the scrub areas. Among the flat bark beetles, their small size and thus greater vulnerability to passive dispersal by wind, and possibly drift, may have offset the effects of isolation on the Pleistocene islands of central Florida and allowed gene flow to continue relatively unimpeded.

Fig. 31 - 36. 31) *Oryzaephilus acuminatus* Halstead, front tarsus; 32) *Cathartosilvanus imbellis* (LeConte), prosternum; 33) *Cucujus clavipes* Fabricius, hind tarsus, male; 34) *Uleiota dubius* (Fabricius), aedeagus (internal sac partially everted); 35) *Uleiota dubius* (Fabricius), pro-and mesosternum; 36) *Catogenus rufus* (Fabricius), pro-and mesosternum.



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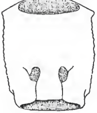

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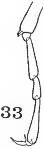

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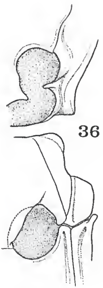

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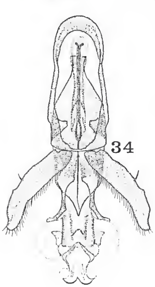

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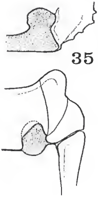

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Fig. 37 - 42. 37) Cucujus clavipes Fabricius, pro-and mesosternum; 38) Charaphloeus convexulus (LeConte), pro-and metasternum; 39) Catogenus rufus (Fabricius), mouthparts, ventral view; 40) Scalidia linearis (LeConte), hind tarsus; 41) Catogenus rufus (Fabricius), hind tarsus; 42) Placonotus modestus (Say), pronotum.

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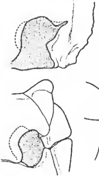

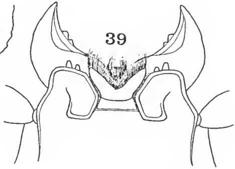

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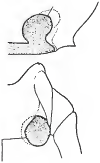

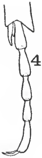

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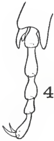

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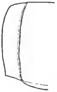

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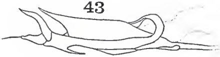
Fig. 43 - 49. 43) *Placonotus modestus* (Say), aedeagus, lateral view; 44) *Uleiota dubius truncatus* Motschulsky, anterior pronotal angle; 44) *Uleiota dubius truncatus* Motschulsky, mandible, male; 46) *Dendrophagus* sp., hind tarsus; 47) *Cryptamorpha desjardinsi* (Guérin-Méneville), head, dorsal view; 48) *Cryptamorpha desjardinsi* (Guérin-Méneville), hind tarsus; 49) *Telephanus velox* (Haldeman), maxillary palpus.



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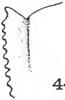

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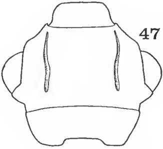

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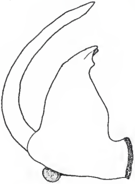

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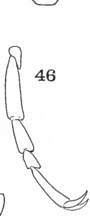

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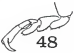

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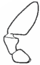

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Fig. 50 - 55. 50) *Telephanus velox* (Haldeman), hind tarsus; *Cucujus clavipes* (Fabricius), head; 52) *Laemophloeus biguttatus* (Say), intercoxal process sternum III; 53) *Cryptolestes ferrugineus* (Stephens), intercoxal process sternum III; 54) *Leptophloeus angustulus* (LeConte), intercoxal process sternum III; 55) *Narthecius* sp., head, dorsal view.

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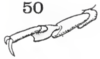

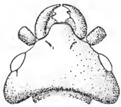

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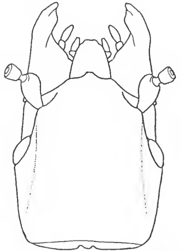

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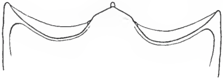

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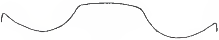

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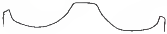

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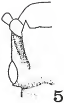
Fig. 56 - 65. 56) Eunausibius salutaris Parsons, antennal cavity; 57) Cathartosilvanus imbellis (LeConte), femoral line, sternum III; 58) Silvanus muticus Sharp, femoral line; 59) S. muticus Sharp, anterior pronotal angle; 60) Pensus gilae (Casey), anterior pronotal angle; 61) Silvanoprus scuticollis (Walker), femoral line; 62) Cathartus quadricollis (Guérin-Méneville), antennal club; 63) Ahasverus advena (Waltl), antennal club; 64) Ahasverus rectus (LeConte), antennal club; 65) Oryzaephilus surinamensis (Linnaeus), temple; 66) Oryzaephilus mercator (Fauvel), temple.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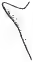
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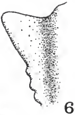
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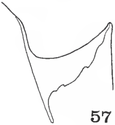
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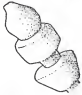
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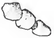
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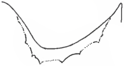
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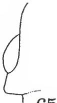
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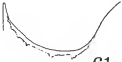
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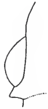
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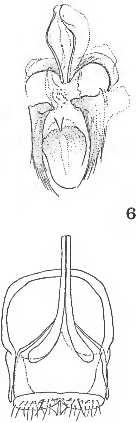
Fig. 67 - 68. 67) *Cryptolestes punctatus* (LeConte), aedeagus and sclerotization of internal sac; 68) *Cryptolestes uncicornis* (Reitter), aedeagus and sclerotization of internal sac.



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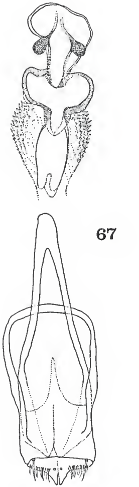

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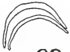
Fig. 69 - 74. 69) Cryptolestes ferrugineus (Stephens), genital sclerite; 70) C. ferrugineus, sclerite of bursa; 71) Cryptolestes pusillus (Schonherr), genital sclerite; 72) C. pusillus, sclerite of bursa; 73) Cryptolestes klapperichi Lefkovitch, genital sclerite; 74) C. klapperichi, sclerite of bursa. (Fig. 69-72 redrawn from Lefkovitch 1962c; Fig. 73-74 redrawn from Lefkovitch 1962 .)



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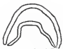

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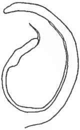

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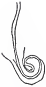

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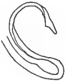

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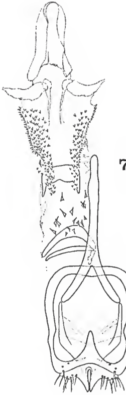
Fig. 75 - 79. 75) Cryptolestes n.sp. 1, aedeagus and internal sac; 76) Cryptolestes turcicus (Grouvelle), genital sclerite; 77) C. turcicus (Grouvelle), sclerite of bursa; 78) Cryptolestes pusilloides (Steel & Howe), genital sclerite; 79) C. pusilloides (Steel & Howe), sclerite of bursa.



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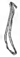

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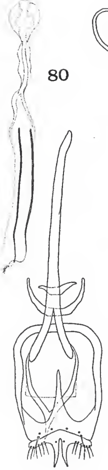
Fig. 80 - 84. 80) Cryptolestes n.sp. 2, aedeagus and internal sac; 81) Cryptolestes n.sp. 2, sclerite of bursa; 82) Laemophloeus fasciatus Melsheimer, left elytron; 83) Charaphloeus convexulus (LeConte), hind tarsus, male; 84) Placonotus politissimus (Wollaston), femoral lines.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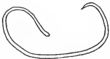
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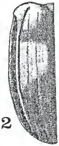
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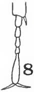
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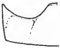
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APPENDIX

Cryptamorpha desjardinsi (Guérin-Méneville)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Dade	Camp Mahachee	27	IV	1983	Thomas & Parker	u.v. light trap	MCTC
1	Dade	Camp Mahachee	12	V	1983	Thomas & Parker	u.v. light trap	MCTC
1	Dade	Camp Mahachee	5	V	1983	Thomas & Parker	u.v. light trap	MCTC
4	Dade	Camp Mahachee	1	VI	1983	Thomas & Parker	u.v. light trap	MCTC
3	Dade	Coral Gables	8	III	1959	C.F. Dowling Jr.	Bambusa vulgaris	FSCA
2	Dade	Goulds	16	IV	1983	Thomas & Frank		FSCA
4	Dade	Miami	29	III	1976	P. Chobrda	Saccharum officinarum	FSCA
1	Dade	Miami	15	VII	1983	L. Chang	orchid	FSCA
1	Palm Beach	Delray Beach	2	III	1977	K. Stolley	Dracaena marginata	FSCA
5	Volusia	Plymouth	12	VII	1983	D. Phelps	Spathiphyllum	FSCA
2	——	——	—	—	——	——		FSCA

Telephanus velox (Haldeman)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	Gainesville	8	VI	1977	B.J. Gaittle	u.v. light trap	FSCA
15	Gadsden	Quincy		VIII-IX	1971	T.M. Neal	D-Vac soybeans	FSCA
1	Leon	Tall Timbers R.S.	14-21	XII	1970	D.L. Harris	pitfall trap	FSCA
1	Marion	Ocala	17	VIII	1977	M.C. Thomas	u.v. light trap	MCTC

Nausibius major Zimmermann

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Liberty	Torreya S.P.	8	VI	1982	M.C. Thomas		MCTC
2	Liberty	Torreya S.P.	14	X	1978	M.C. Thomas	oak w/slime flux	MCTC

Nausibius repandus LeConte

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	Gainesville	17	III	1984	M.C. Thomas		MCTC
1	Alachua	Gainesville	23-25	VI	1978	F. Mead	u.v. light trap	FSCA
2	Marion	V. of Rainbow Sprgs	31	V	1982	M.C. Thomas		MCTC
14	Marion	V. of Rainbow Sprgs	24	XII	1983	M.C. Thomas	Pinus w/ scolytids	MCTC

Silvanus muticus Sharp

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
8	Alachua	Archer	5	VI	1982	M.C. Thomas	Quercus sp.	MCTC
2	Alachua	Pierce's Homestead W. of Gainesville	13	III	1977	W.M. Pierce	u.v. light trap	FSCA
3	Columbia	O'Leno S.P.	1	IV	1984	M.C. Thomas		FSCA
1	Dade	Camp Mahachee	27	V	1983	Thomas & Parker	u.v. light trap	MCTC
3	Dixie	3.5mi. N. Old Town	13	I	1980	M.C. Thomas		FSCA
2	Dixie	3.5mi. N. Old Town	3	V	1979	M.C. Thomas		FSCA
2	Dixie	3.5mi. N. Old Town	5	V	1978	M.C. Thomas		FSCA
11	Dixie	Pine Landing	23	VII	1978	M.C. Thomas		MCTC
2	Highlands	Highlands Ham. S.P.	18	IV	1983	M.C. Thomas		FSCA

Silvanus muticus Sharp continued

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Highlands	Highlands Ham. S.P.	20	IV	1983	M.C. Thomas		FSCA
1	Jackson	——	4	VIII	1954	F.W. Mead	at light	FSCA
1	Levy	Manatee Sprgs S.P.	22	V	1983	M.C. Thomas		MCTC
1	Liberty	Torreya S.P.	4	VII	1965	M.V. Weems Jr.	u.v. light trap	FSCA
4	Liberty	Torreya S.P.	4	IX	1983	M.C. Thomas		MCTC
1	Marion	Juniper Springs	2	X	1977	M.C. Thomas	hardwood log	MCTC

Silvanus planatus Germar

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
2	Marion	Ocala	19	XII	1979	M.C. Thomas	Quercus sp. log	MCTC
1	Marion	Ocala	29	XII	1976	M.C. Thomas		MCTC
1	Alachua	Gainesville	9	V	1984	R.E. White		FSCA
14	Alachua	——	29	I	1959	M.V. Weems Jr.	Quercus	FSCA
2	Clay	Camp Crystal	31-III-1-IV		1982	M.C. Thomas		MCTC
1	Columbia	O'Leno S.P.	1	IV	1984	M.C. Thomas		MCTC
12	Columbia	——	19	II	1960	M.V. Weems Jr.	Quercus laevis	FSCA
9	Dixie	3.5mi. N. Old Town	27	IV	1978	M.C. Thomas		FSCA
9	Dixie	3.5mi. N. Old Town	5	IV	1980	M.C. Thomas		FSCA
7	Dixie	3.5mi. N. Old Town	13	I	1980	M.C. Thomas		FSCA
4	Dixie	3.5mi. N. Old Town	24	V	1978	M.C. Thomas		FSCA
1	Dixie	3.5mi. N. Old Town	21	V	1979	Woodruff & Fragoso	u.v. light trap	FSCA
9	Duval	——	7	I	1959	M.V. Weems Jr.	Quercus	FSCA
1	Marion	Ocala	27	X	1977	M.C. Thomas	turkey oak	MCTC
3	Marion	Ocala	9	XII	1976	M.C. Thomas	Quercus sp. log	MCTC
1	Marion	Ocala	11	XII	1979	M.C. Thomas	Quercus sp. log	MCTC
1	Marion	V. of Rainbow Sprgs	3-7	VII	1982	M.C. Thomas		MCTC
1	Marion	V. of Rainbow Sprgs	14	II	1982	M.C. Thomas		FSCA
9	Putnam	——	9	I	1960	M.V. Weems Jr.	Quercus	FSCA

Cathartosilvanus imbellis (LeConte)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
12	Alachua	Levy Co. line SR 24	19	II	1983	M.C. Thomas	Quercus sp.	FSCA
2	Columbia	O'Leno S.P.	10	V	1981	M.C. Thomas		FSCA
1	Dixie	Pine Landing	23	VII	1979	M.C. Thomas		MCTC
1	Liberty	Torreya S.P.	4	IX	1983	M.C. Thomas		FSCA
1	Marion	Ocala	19	XII	1976	M.C. Thomas	Quercus sp. log	MCTC
2	Marion	Ocala	9	I	1977	M.C. Thomas		MCTC
2	Marion	V. of Rainbow Sprgs	24	XII	1983	M.C. Thomas		MCTC
1	Marion	V. of Rainbow Sprgs	3-7	VII	1982	M.C. Thomas		FSCA
14	Marion	V. of Rainbow Sprgs	14	II	1982	M.C. Thomas		FSCA
1	Marion	V. of Rainbow Sprgs	31	V	1982	M.C. Thomas		FSCA
19	Marion	V. of Rainbow Sprgs	20	XII	1981	M.C. Thomas		FSCA
1	Marion	V. of Rainbow Sprgs	13	XI	1982	M.C. Thomas		FSCA
3	Okaloosa	4.5mi N Holt	15-19	VI	1978	L. Stange		FSCA

Cathartosilvanus trivialis (Grouvelle)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
3	Dade	Goulds	19	IV	1983	Thomas & Frank		FSCA
1	Dade	Miami Springs	14	VI	1982	R.E. Woodruff		FSCA

Silvanoprus scuticollis (Walker)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	Gainesville	19	V	1978	M.C. Thomas	u.v. light trap	MCTC
1	Alachua	Gainesville	30	VII	1978	M.C. Thomas	u.v. light trap	MCTC
1	Alachua	Gainesville	18	VII	1978	M.C. Thomas		FSCA
1	Alachua	Gainesville	28	VIII	1978	M.C. Thomas	u.v. light trap	MCTC
8	Dade	Camp Mahachee	27	IV	1983	Thomas & Parker	u.v. light trap	MCTC
1	Dade	Camp Mahachee	12	V	1983	Thomas & Parker	u.v. light trap	MCTC
9	Dade	Camp Mahachee	20	V	1983	Thomas & Parker	u.v. light trap	MCTC
10	Dade	Camp Mahachee	6	V	1983	Thomas & Parker	u.v. light trap	MCTC
2	Dade	Camp Mahachee	16	VI	1983	Thomas & Parker	u.v. light trap	MCTC
9	Dade	Camp Mahachee	14	IX	1983	Thomas & Parker	u.v. light trap	MCTC
1	Dade	Castellow Ham.	02	III	1968	H.E. Woodruff	u.v. light trap	FSCA
9	Dade	Matheson Ham.	14	VI	1975	Thomas & Frank	u.v. light trap	MCTC
1	Dade	Miami	10	VIII	1960	P.E. Briggs	u.v. light trap	FSCA
1	Dade	Perrine	24	VII	1976	M.C. Thomas	u.v. light trap	MCTC
1	Dade	Hedlands Park	28	I	1978	H. Clark	u.v. light trap	FSCA
1	Indian River	S. of Vero Beach	28	VIII	1975	J.H. Frank	u.v. light trap	MCTC
8	Liberty	Torreya S.P.	4	VII	1965	H.V. Weems Jr.	u.v. light trap	FSCA
2	Marion	Ocala	26	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	7	IX	1977	M.C. Thomas	u.v. light trap	MCTC
2	Marion	Ocala	13	IX	1977	M.C. Thomas	u.v. light trap	MCTC
2	Marion	V. of Rainbow Sprgs	3-7	VII	1982	M.C. Thomas		MCTC

Ahasverus advena (Waltl)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	Gainesville	30	VII	1978	M.C. Thomas	u.v. light trap	MCTC
4	Dade	Miami	12	VI	1968	S.E. Simpson	in lumber warehouse	FSCA
2	Dade	Miami (ex Bahamas)	09	VI	1957	R.A. Buchanan	in straw jackets	FSCA
1	Marion	Ocala	20	VI	1977	M.C. Thomas	u.v. light trap	MCTC
3	Marion	Ocala	04	X	1968	W.D. Robertson	in hay	FSCA
1	Marion	V. of Rainbow Sprgs	5	V	1982	M.C. Thomas		MCTC
1	Marion	V. of Rainbow Sprgs	3-7	VII	1982	M.C. Thomas		FSCA
1	Marion	V. of Rainbow Sprgs	13	XI	1982	M.C. Thomas		FSCA
1	Monroe	Stock Is.	20	IV	1968	J. Stibbick	under debris	FSCA
1	Pinellas	Dunedin	27	III	1913	W.S. Blatchley		FSCA

Ahasverus rectus (LeConte)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	Gainesville	4	I	1927	A.M.T.	Berlese/wire grass	FSCA
3	Alachua	Gainesville	16	II	1979	M.C. Thomas		FSCA
1	Alachua	Gainesville	15	IV	1938	S.B. Merrill		FSCA
3	Alachua	Gainesville	19	V	1960	K.A. Noegel	at light	FSCA
1	Alachua	Gainesville	8	V	1939	D.G. Merrill		FSCA
1	Alachua	Gainesville	11	V	1978	M.C. Thomas	u.v. light trap	MCTC
4	Alachua	Gainesville	30	VI	1978	M.C. Thomas		MCTC
2	Alachua	Gainesville	8	VI	1959	H.V. Weems Jr.	at light	FSCA
12	Alachua	Gainesville	30	VI	1978	M.C. Thomas		FSCA
9	Alachua	Gainesville	4	VI	1958	H.V. Weems Jr.	at light	FSCA
27	Alachua	Gainesville	18	VII	1978	M.C. Thomas		FSCA
1	Alachua	Gainesville	26	VIII	1979	M.C. Thomas	u.v. light trap	MCTC
2	Alachua	San Felasco Ham.	29	III	1983	M.C. Thomas		FSCA
1	Alachua	———	21	VII	1954	H.V. Weems Jr.	at light	FSCA

Ahasverus rectus (LeConte) continued

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	——	8	VIII	1955	M.V. Weems Jr.	at light	FSCA
2	Alachua	——	15	VIII	1955	M.V. Weems Jr.	at light	FSCA
1	Alachua	——	27	VIII	1954	M.V. Weems Jr.	at light	FSCA
3	Alachua	——	25	IX	1955	F.W. Mead	at light	FSCA
3	Brevard	Indialantic	25	XII	1977	M.C. Thomas		FSCA
1	Collier	Collier Sem. S.P.	4	IV	1964	Arnett & VanTassell		FSCA
1	Dade	Camp Mahachee	27	IV	1983	Thomas & Parker	u.v. light trap	MCTC
1	Dade	Camp Mahachee	14	IV	1983	Thomas & Parker	u.v. light trap	MCTC
4	Dade	Camp Mahachee	27	IV	1983	Thomas & Parker	u.v. light trap	MCTC
5	Dade	Camp Mahachee	5	V	1983	Thomas & Parker	u.v. light trap	MCTC
12	Dade	Camp Mahachee	20	V	1983	Thomas & Parker	u.v. light trap	MCTC
1	Dade	Camp Mahachee	27	V	1983	Thomas & Parker	u.v. light trap	MCTC
2	Dade	Camp Mahachee	23	VIII	1983	Thomas & Parker	u.v. light trap	MCTC
2	Dade	Camp Mahachee	19	VIII	1983	Thomas & Parker	u.v. light trap	MCTC
8	Dade	Castellow Ham.	17	IV	1972	R.M. Baranowski	u.v. light trap	FSCA
1	Dade	Florida City	26	IV	1982	Thomas & Frank	u.v. light trap	FSCA
1	Dade	Long Pine Key	19	III	1977	Platt & Riley	u.v. light trap	FSCA
1	Dade	Matheson Ham.	14	VI	1975	Thomas & Frank	u.v. light trap	MCTC
3	Dade	Miami	25	V	1960	P.E. Briggs	u.v. light trap	FSCA
12	Dade	Miami	—	VI	1957	C.F. Dowling Jr.		FSCA
1	Dade	S. Miami, USDA	9	VI	1974	J.B. Heppner	u.v. light	FSCA
2	Dade	——	—	VI	1949	——		FSCA
17	Dixie	3.5mi. N. Old Town	21	V	1979	Woodruff & Fragosu	u.v. light trap	FSCA
3	Gadsden	Quincy	23	VIII	1971	T.H. Neal	pitfall trap	FSCA
1	Highlands	Archbold Biol. Sta.	14	V	1974	J.E. Carrel et al.	u.v. light trap	FSCA
1	Highlands	Lake Placid	2-15	II	1970	V. Roth		FSCA
2	Highlands	Lake Placid	19	III	1963	M.M. Hume		FSCA
2	Highlands	Lake Placid	7	VI	1963	M.H. Hume		FSCA
1	Indian River	S. of Vero Beach	19	II	1975	J.H. Frank	u.v. light trap	MCTC
1	Indian River	S. of Vero Beach	15	VII	1978	M.C. Thomas	u.v. light trap	MCTC
1	Indian River	Vero Beach	7	I	1976	M.C. Thomas	at light	MCTC
1	Indian River	Vero Beach	25	V	1964	W.L. Bidlingmayer		FSCA
1	Indian River	Vero Beach	8	V	1975	M.C. Thomas	at light	MCTC
2	Indian River	Vero Beach	8	V	1975	M.C. Thomas	at light	MCTC
1	Indian River	Vero Beach	31	XII	1974	M.C. Thomas	at light	MCTC
4	Lee	Ft. Myers	25	VII	1975	V.W. Yingst	in light boel	FSCA
4	Leon	Tall Timbers	1-9	V	1972	D. Harris	pitfall	FSCA
2	Leon	Tall Timbers	9-15	V	1972	D. Harris	pitfall	FSCA
1	Leon	Tall Timbers	27	XI	1968	W. Baker		FSCA
2	Liberty	Torreya S.P.	4	VII	1965	M.V. Weems Jr.	u.v. light trap	FSCA
1	Liberty	Torreya S.P.	3	IX	1983	M.C. Thomas		FSCA
3	Liberty	Torreya S.P.	4	IX	1983	M.C. Thomas		FSCA
1	Marion	Juniper Springs	25	VII	1960	M.A. Denmark	P. clausa debris	FSCA
1	Marion	Ocala	13	VI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	29	VI	1977	M.C. Thomas	u.v. light trap	MCTC
3	Marion	Ocala	20	VI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	12	VI	1977	M.C. Thomas	u.v. light trap	MCTC
4	Marion	Ocala	26	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	25	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	29	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	4	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	11	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	15	IX	1977	M.C. Thomas	u.v. light trap	FSCA
4	Marion	Ocala	13	IX	1977	M.C. Thomas	u.v. light trap	MCTC
3	Marion	V. of Rainbow Sprgs	3-7	VII	1982	M.C. Thomas		FSCA
1	Monroe	Bahia Honda S.P.	1-4	VII	1973	R.E. Woodruff	u.v. light trap	FSCA
6	Monroe	Garden Key	10	VII	1963	M.A. Denmark	Casuarina sp.	FSCA
1	Monroe	Stock Island	30	IV	1964	F.A. Buchanan	u.v. light trap	FSCA
1	Monroe	Stock Island	25	IV	1963	F.A. Buchanan	u.v. light trap	FSCA

Ahasverus rectus (LeConte) continued

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
9	Monroe	Stock Island	11	VI	1964	F.A. Buchanan	u.v. light trap	FSCA
1	Monroe	Stock Island	8	VII	1964	F.A. Buchanan	u.v. light trap	FSCA
1	Monroe	Upper Key Largo	31	III	1976	M.C. Thomas	u.v. light trap	MCTC
1	Monroe	Upper Key Largo	1	IV	1976	M.C. Thomas	u.v. light trap	MCTC
1	Monroe	Upper Key Largo	23	VII	1978	M.C. Thomas	berlese/litter	MCTC
1	Orange	Winter Park	11	VI	1938	——	in house	FSCA
9	Polk	Lake Alfred	7-14	III	1963	M.H. Muma		FSCA
7	Polk	Winter Haven	5	VIII	1960	J. Hayward	u.v. light trap	FSCA
1	Santa Rosa	Blackwater R.S.F.	16	VIII	1971	H.V. Weems Jr.	at light	FSCA
1	Sarasota	Myakka Riv. S.P.	23	VI	1965	C.W. O'Brien	u.v. light trap	FSCA

Cathartus quadricollis (Guérin-Méneville)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	Gainesville	27	I	1979	G.B. Edwards	fallen hickory nut	FSCA
9	Alachua	Gainesville	30	IV	1964	J.W. Perry	u.v. light trap	FSCA
1	Alachua	Gainesville	19	V	1960	K.A. Noegel	at light	FSCA
1	Alachua	Gainesville	25	V	1948	H.V. Weems Jr.	feeding on squash	FSCA
1	Alachua	Gainesville	1	VI	1964	J.W. Perry	u.v. light trap	FSCA
1	Alachua	Gainesville	10	VI	1964	J.W. Perry	u.v. light trap	FSCA
1	Alachua	Gainesville	13	VII	1948	L.C. Kuitert	at light	FSCA
3	Alachua	Gainesville	20	VII	1964	J.W. Perry	u.v. light trap	FSCA
1	Alachua	Gainesville	23	VII	1958	R.E. Woodruff	at light	FSCA
9	Alachua	Gainesville	28	VII	1964	J.W. Perry	u.v. light trap	FSCA
2	Alachua	Gainesville	1	X	1958	R.E. Woodruff	at light	FSCA
11	Alachua	Gainesville	6	X	1947	W.E. Stokes		FSCA
30	Alachua	Gainesville	6	XII	1917	Berger	corn	FSCA
1	Alachua	——	12	IV	1954	H.V. Weems Jr.	at light	FSCA
1	Alachua	——	3	VIII	1954	H.H. Van Pelt	on Zea mays	FSCA
3	Alachua	——	27	VIII	1954	H.V. Weems Jr.	at light	FSCA
19	Alachua	——	1	XI	1954	H.A. Denmark	on Carya illinoiensis	FSCA
8	Dade	Homestead, AREC	18	IV	1983	Thomas & Frank		MCTC
2	Dade	Naranja	19	VIII	1964	J.H. Knowles	ex Cattleya mahlor	FSCA
1	Dixie	3.5mi. N. Old Town	21	V	1978	Woodruff & Fragoso	u.v. light trap	FSCA
1	Liberty	Torreya S.P.	4	VII	1965	H.V. Weems Jr.	u.v. light trap	FSCA
1	Marion	Ocala	29	VII	1977	M.C. Thomas	u.v. light trap	MCTC
4	Marion	Ocala	7	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	11	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	15	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	24	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	17	XI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	21	XI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Osceola	St. Cloud	14	XII	1916	Mrs. Kloos	citrus	FSCA
9	Polk	Lakeland	28	V	1977	Thomas & Raymond		MCTC
3	Washington	5mi E. Chipley	31	VIII	1960	W.C. Rhoades	u.v. light trap	FSCA

Catogenus rufus (Fabricius)

No.	County	Locality	Day/Month/Year			Collector	Date	Coll.
1	Alachua		30	IV	1947			FSCA
1	Alachua			X	1966	L.A. Hetrick		FSCA
1	Alachua	Gainesville	11	V	1979	M.C. Thomas	u.v. light trap	MCTC
1	Alachua	Gainesville	23-25	VI	1978	F. Mead	u.v. light trap	FSCA
1	Alachua	Gainesville	2	VI	1978	M.C. Thomas		MCTC
1	Alachua	Gainesville	28	VIII	1972	J.B. Heppner	u.v. light	FSCA

Catogenus rufus (Fabricius) continued

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Collier		1	XII	1955	H.V. Weems Jr.	Pinus	FSCA
1	Dade			V	1955	D.R. Paulson		FSCA
1	Dade	2 mi. SW Hallandale	19	VI	1962	H.V. Weems Jr.	dead Quercus	FSCA
1	Dade	Coral Gables	14	IV	1948			FSCA
2	Dade	Perrine	6-8	V	1977	Don Urban	u.v. light trap	MCTC
2	Dade	Perrine	2	VI	1976	M.C. Thomas	u.v. light trap	MCTC
2	Dade	Richmond	10	IV	1948			FSCA
9	Dade	Richmond		V	1948			FSCA
1	Dade	Richmond	2	XI	1950			FSCA
2	Dade	S. Miami, USDA	19	VI	1962	H.V. Weems Jr.	dead avocado stump	FSCA
1	Highlands		10	XI	1952	D.R. Paulson		FSCA
1	Highlands	Archbold Biol. Sta.	19	III	1968	C.E. White		FSCA
1	Highlands	Archbold Biol. Sta.	13-17	IV	1961	N.M. Downie		FSCA
1	Highlands	Highlands Ham. S.P.	12	I	1959	H.V. Weems Jr.	Pinus	FSCA
1	Highlands	Highlands Ham. S.P.	16	XII	1957	H.V. Weems Jr.	Pinus	FSCA
2	Indian River	S. of Vero Beach	8	II	1977	Thomas & Frank	Pinus elliotti	MCTC
1	Indian River	S. of Vero Beach	12	IX	1974	M.C. Thomas		MCTC
1	Indian River	S. of Vero Beach	4	XI	1974	M.C. Thomas		MCTC
1	Marion	Ocala	1	I	1976	M.C. Thomas		MCTC
3	Marion	Ocala	22	III	1977	M.C. Thomas		MCTC
2	Marion	Ocala	11	XI	1977	M.C. Thomas	Quercus sp. log	MCTC
1	Monroe	Big Pine Key	9	V	1963	H.V. Weems Jr.	under bark	FSCA
1	Monroe	Key Largo	1	I	1967	H.V. Weems Jr.	dead tree	FSCA
1	Monroe	Key Largo	14	I	1962	B.K. Dozier	dead Lysoloma	FSCA
32	Monroe	Key Largo	26	III	1957	H.V. Weems Jr.	under bark	FSCA
1	Monroe	Key Largo	7	VI	1960	H.V. Weems Jr.		FSCA
1	Monroe	Little Torch Key	7	V	1961	H.V. Weems Jr.	under bark	FSCA
1	Monroe	Plantation Key	9	IV	1968	H.V. Weems Jr.	u.v. light trap	FSCA
1	Monroe	Stock Island	11	V	1961	R.E. Woodruff		FSCA
2	Monroe	Upper Key Largo	30	V	1976	Thomas & Frank	u.v. light trap	MCTC
1	Monroe	Upper Key Largo	23	VII	1978	M.C. Thomas	u.v. light trap	MCTC
9	St. Lucie	Ft. Pierce	1	III	1983	K. Hibbard	Casuarina sp.	FSCA

Scalidia linearis (LeConte)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	Gainesville	2	III	1979	R.E. Woodruff	at light	FSCA
1	Dade	Perrine	5-8	V	1977	Don Urban	u.v. light trap	MCTC
9	Marion	Ocala	28	III	1977	M.C. Thomas	u.v. light trap	MCTC
9	Marion	Ocala	29	III	1977	M.C. Thomas	u.v. light trap	FSCA
2	Marion	Ocala	30	III	1977	M.C. Thomas	u.v. light trap	MCTC
5	Marion	Ocala	31	III	1977	M.C. Thomas	u.v. light trap	MCTC
2	Marion	Ocala	2	IV	1977	M.C. Thomas	u.v. light trap	MCTC
3	Marion	Ocala	4	IV	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	4	IV	1977	M.C. Thomas	u.v. light trap	FSCA
1	Marion	Ocala	28	VII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	20	VII	1977	M.C. Thomas	u.v. light trap	MCTC

Lathropus pictus Casey

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
4	Dade	Camp Mahachee				Thomas & Parker	blacklight trap	MCTC
3	Dade	Camp Mahachee	27	IV	1983	Thomas & Parker	blacklight trap	MCTC
1	Dade	Camp Mahachee	5	V	1983	Thomas & Parker	blacklight trap	MCTC

Lathropus pictus Casey continued

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
9	Dade	Camp Mahachee	12	V	1983	Thomas & Parker	blacklight trap	MCTC
1	Dade	Camp Mahachee	20	V	1983	Thomas & Parker	blacklight trap	MCTC
1	Dade	Camp Mahachee	27	V	1983	Thomas & Parker	blacklight trap	MCTC
1	Dade	Camp Mahachee	9	IX	1983	Thomas & Parker	blacklight trap	MCTC
1	Dade	Camp Mahachee	14	IX	1983	Thomas & Parker	blacklight trap	MCTC
11	Dade	Camp Mahachee	5	V	1983	Thomas & Parker	blacklight trap	MCTC
5	Dade	Camp Mahachee	20	V	1983	Thomas & Parker	blacklight trap	MCTC
3	Dade	Camp Mahachee	27	V	1983	Thomas & Parker	blacklight trap	MCTC
1	Dade	Camp Mahachee	15	VI	1983	Thomas & Parker	blacklight trap	MCTC
1	Highlands	Highlands Ham. S. P.	5	VII	1975	Thomas & Frank	dying citrus	MCTC
6	Palm Beach	Jupiter	29	V	1982	D. Harp	Acacia auriculiformis	FSCA

Lathropus vernalis Casey

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
2	Alachua	Gainesville	17	III	1984	Thomas	Pinus	MCTC
1	Dade	Camp Mahachee	27	IV	1983	Thomas & Parker	u.v. light trap	MCTC
1	Dade	Camp Mahachee	5	V	1983	Thomas & Parker	u.v. light trap	MCTC
2	Dade	Camp Mahachee	9	IX	1983	Thomas & Parker	u.v. light trap	MCTC
9	Dade	Camp Mahachee	—	—	——	Thomas & Parker	u.v. light trap	MCTC
1	Dixie	3.5mi N. Old Town	21	V	1979	Woodruff & Fragoso	u.v. light trap	FSCA
1	Highlands	Highlands Ham. S. P.	23	IV	1982	M.C. Thomas		MCTC
1	Indian River	Fellsmere	4	VII	1976	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	2	VI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	26	VI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	27	VI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	29	VI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	21	VII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	17	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
6	Marion	V. of Rainbow Sprgs	5	V	1982	M.C. Thomas	u.v. light trap	MCTC
4	Marion	V. of Rainbow Sprgs	31	V	1982	M.C. Thomas	u.v. light trap	MCTC
1	Monroe	Plantation Key	9	IV	1966	F.W. Mead	u.v. light trap	FSCA
3	Monroe	Upper Key Largo	1	IV	1975	M.C. Thomas	u.v. light trap	MCTC
1	Monroe	Upper Key Largo	3	IV	1979	Thomas & Frank	u.v. light trap	MCTC
1	Putnam	2mi. SW Interlachen	5–6	X	1971	Graham & Woodruff	u.v. light trap	FSCA

Rhabdophloeus horni (Casey)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Dade	Homestead	19	IX	1959	R.H. Baranowski		FSCA
2	Monroe	Upper Key Largo	3	IV	1979	Thomas & Frank	gumbo limbo log	MCTC
2	Monroe	Upper Key Largo	30	V	1979	Thomas & Frank	u.v. light trap	MCTC
1	Monroe	Upper Key Largo	3	VI	1979	M.C. Thomas	u.v. light trap	MCTC

Cryptolestes uncicornis (Reitter)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	San Felasco Ham.	14	III	1982	M.C. Thomas		FSCA
1	Alachua	——	17	XI	1958	H.V. Weems Jr.	under bark	FSCA
1	Clay	Camp Crystal	31-III-1-IV		1982	M.C. Thomas		MCTC
2	Columbia	O'Leno S.P.	10	V	1981	M.C. Thomas		MCTC
2	Columbia	——	18	II	1950	H.V. Weems Jr.	Quercus laevis	FSCA
3	Dixie	3.5mi. N. Old Town	13	I	1980	M.C. Thomas		FSCA
4	Dixie	3.5mi. N. Old Town	5	IV	1980	M.C. Thomas		FSCA

Cryptolestes uncicornis (Reitter) continued

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Dixie	3.5mi. N. Old Town	24	V	1979	M.C. Thomas		FSCA
2	Dixie	3.5mi. N. Old Town	31	V	1978	Woodruff & Fragoso	u.v. light trap	FSCA
24	Dixie	3.5mi. N. Old Town	24	V	1979	M.C. Thomas		MCTC
2	Liberty	Torreya S.P.	13	X	1978	M.C. Thomas		FSCA
1	Marion	Ocala	19	VII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	11	XI	1977	M.C. Thomas		MCTC
1	Marion	Ocala	18	XII	1978	M.C. Thomas	Quercus sp. log	MCTC
1	Marion	V. of Rainbow Sprgs	14	II	1982	M.C. Thomas		MCTC

Cryptolestes punctatus (LeConte)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
5	Alachua	Levy Co. line at SR	19	II	1983	M.C. Thomas	Quercus sp.	FSCA
9	Alachua	San Felasco Ham.	4	II	1983	M.C. Thomas		FSCA
10	Alachua	San Felasco Ham.	20	II	1983	M.C. Thomas	Quercus sp. log	MCTC
21	Alachua	San Felasco Ham.	29	IX	1983	M.C. Thomas		FSCA
3	Alachua	——	30	I	1954	M.V. Weems Jr.	Pinus	FSCA
3	Clay	Camp Crystal	31-III-1-IV		1982	M.C. Thomas		MCTC
1	Columbia	O'Leno S.P.	1	IV	1984	M.C. Thomas		MCTC
1	Dixie	3.5mi. N. Old Town	23	VII	1978	M.C. Thomas		MCTC
13	Dixie	3.5mi. N. Old Town	13	I	1980	M.C. Thomas		FSCA
4	Duval	——	7	I	1956	M.V. Weems Jr.	Quercus	FSCA
5	Marion	Ocala	1	I	1978	M.C. Thomas		MCTC
1	Marion	Ocala	21	VII	1977	M.C. Thomas	u.v. light trap	MCTC
8	Marion	Ocala	10	IX	1977	M.C. Thomas	hardwood log	MCTC
1	Marion	Ocala	25	IX	1977	M.C. Thomas		MCTC
1	Marion	Ocala	1	X	1977	M.C. Thomas		MCTC
8	Marion	Ocala	9	X	1977	M.C. Thomas		MCTC
3	Marion	Ocala	15	X	1977	M.C. Thomas		MCTC
1	Marion	Ocala	11	XII	1978	M.C. Thomas		MCTC
19	Marion	V. of Rainbow Sprgs	14	II	1982	M.C. Thomas		FSCA
2	Marion	V. of Rainbow Sprgs	4	VII	1982	M.C. Thomas		MCTC
1	Marion	V. of Rainbow Sprgs	20	VIII	1983	M.C. Thomas		MCTC
92	Putnam	Lake Como	22	X	1977	M.C. Thomas		MCTC
1	Putnam	Lake Como	24	X	1977	M.C. Thomas		MCTC

Dysmerus basalis Casey

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	Gainesville	23	V	1979	M.C. Thomas	u.v. light trap	MCTC
4	Monroe	Key Largo	14-20	V	1977	R. Turnbow	ex Metopium toxiferum	RHTC
4	Monroe	Key Largo	11-17	VI	1977	R. Turnbow	ex Metopium toxiferum	RHTC

Leptophloeus angustulus (LeConte)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Columbia	O'Leno S.P.	10	V	1981	M.C. Thomas	Quercus sp. log	MCTC
1	Marion	Ocala	13	VI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	21	VII	1977	M.C. Thomas	u.v. light trap	MCTC

Narthecius grandiceps LeConte

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Marion	Ocala	13	VI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	V. of Rainbow Sprgs	6	V	1982	M.C. Thomas		MCTC

Laemophloeus biguttatus (Say)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
2	Alachua	Gainesville	20	II	1982	M.C. Thomas		MCTC
1	Alachua	Gainesville	21	III	1978	M.C. Thomas	u.v. light trap	FSCA
1	Alachua	Gainesville	30	III	1979	M.C. Thomas	u.v. light trap	FSCA
1	Alachua	Gainesville	28	III	1938	S.B. Merrill		FSCA
1	Alachua	Gainesville	31	III	1960	R.E. Woodruff	at light	FSCA
1	Alachua	Gainesville	28	III	1938	D.B. Merrill		FSCA
1	Alachua	Gainesville	10	IV	1983	E.M. Collins Jr.	u.v. light trap	FSCA
1	Alachua	Gainesville	4	IV	1978	M.C. Thomas	u.e. light trap	MCTC
1	Alachua	Gainesville	3	IV	1939	B.B. Merrill		FSCA
1	Alachua	Gainesville	23	IV	1976	M.C. Thomas	u.v. light trap	MCTC
1	Alachua	Gainesville	15	IV	1938	D.B. Merrill		FSCA
2	Alachua	Gainesville	23	V	1960	R.E. Woodruff	at light	FSCA
5	Alachua	Gainesville	13	V	1968	R.E. Woodruff	u.v. light trap	FSCA
1	Alachua	Gainesville	5	VI	1958	M.V. Weems Jr.	at light	FSCA
1	Alachua	Gainesville	2	VII	1978	M.C. Thomas	u.v. light trap	FSCA
1	Alachua	Gainesville	20	VIII	1964	J.W. Perry	u.v. light trap	FSCA
1	Alachua	Gainesville	15-17	IX	1972	F.W. Mead	u.v. light trap	FSCA
1	Alachua	Gainesville	3	XII	1978	M.C. Thomas	u.v. light trap	MCTC
3	Alachua	San Felasco Ham.	30	I	1983	M.C. Thomas		FSCA
2	Alachua	San Felasco Ham.	8	II	1983	M.C. Thomas		FSCA
2	Alachua	San Felasco Ham.	4	II	1983	M.C. Thomas		FSCA
1	Alachua	——	28	I	1958	M.V. Weems Jr.	Quercus	FSCA
1	Alachua	——	21	VI	1958	M.A. Denmark	at light	FSCA
2	Columbia	O'Leno S.P.	10	V	1981	M.C. Thomas		FSCA
87	Dixie	3.5mi. N. Old Town	13	I	1980	M.C. Thomas		FSCA
4	Dixie	3.5mi. N. Old Town	8	IV	1980	M.C. Thomas		FSCA
17	Dixie	3.5mi. N. Old Town	27	IV	1979	M.C. Thomas		FSCA
24	Dixie	3.5mi. N. Old Town	21	V	1978	Woodruff & Fragoso	u.v. light trap	FSCA
8	Dixie	3.5mi. N. Old Town	24	V	1979	M.C. Thomas		FSCA
1	Duval	Jacksonville	8-15	VIII	1958	D.W. Ribble		FSCA
2	Hernando	Brooksville	27	I	1940	——		CASC
1	Hernando	Brooksville	23	I	1940	——		CASC
1	Indian River	Delo area	8	VI	1964	W.L. Bidlingmayer	truck trap	FSCA
1	Indian River	S. of Vero Beach	25	VI	1975	J.H. Frank	u.v. light trap	MCTC
1	Lee	Ft. Myers	25	VII	1975	V.W. Yingst	in light bowl	FSCA
3	Levy	Manatee Sprgs S.P.	22	V	1983	M.C. Thomas		MCTC
8	Liberty	Torreya S.P.	6	V	1979	M.C. Thomas		FSCA
1	Liberty	Torreya S.P.	4	VII	1965	M.V. Weems Jr.	u.v. light trap	FSCA
1	Liberty	Torreya S.P.	4	IX	1983	M.C. Thomas		FSCA
1	Liberty	Torreya S.P.	13	X	1979	M.C. Thomas		FSCA
1	Marion	Ocala	6	I	1978	M.C. Thomas	u.v. light trap	MCTC
2	Marion	Ocala	25	III	1978	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	28	VI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	24	IX	1977	M.C. Thomas	u.v. light trap	MCTC
4	Marion	Ocala	13	IX	1977	M.C. Thomas	u.v. light trap	MCTC
2	Marion	Ocala	11	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	8	X	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	21	XI	1977	M.C. Thomas	u.v. light trap	MCTC
3	Marion	Ocala	28	XII	1976	M.C. Thomas	Quercus sp. log	MCTC
2	Marion	Ocala	14	XII	1977	M.C. Thomas	u.v. light trap	MCTC
14	Marion	Ocala	18	XII	1976	M.C. Thomas	Quercus sp. log	MCTC

Laemophloeus biguttatus (Say) continued

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
3	Marion	Ocala	29	XII	1978	M.C. Thomas	Quercus sp. log	MCTC
4	Marion	V. of Rainbow Sprgs	14	II	1982	M.C. Thomas		FSCA
7	Marion	V. of Rainbow Sprgs	5	V	1982	M.C. Thomas		FSCA
5	Marion	V. of Rainbow Sprgs	31	V	1982	M.C. Thomas		FSCA
2	Marion	V. of Rainbow Sprgs	3-7	VII	1982	M.C. Thomas		FSCA
2	Okaloosa	4.5mi. N. Holt, Blackwater R.St.F.	15-18	VI	1978	L. Stange		FSCA
1	Polk	Winter Haven	5	VIII	1960	J. Hayward	u.v. light trap	FSCA
1	Polk	Winter Haven	20	V	1982	H.O. Schmidt		FSCA
1	Putnam	——	8	I	1960	H.V. Weems Jr.	Quercus	FSCA
7	Putnam	——	9	III	1960	H.V. Weems Jr.	Quercus laevis	FSCA
1	Putnam	——	18	VI	1960	H.V. Weems Jr.	Quercus laevis	FSCA
1	Volusia	——	25	VII	1959	H.A. Denmark	at light	FSCA

Laemophloeus megacephalus Grouvelle

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	Gainesville	4	VII	1947	H.V. Weems Jr.	at light	FSCA
1	Alachua	Gainesville	18	IX	1972	F.W. Mead	u.v. light trap	FSCA
1	Alachua	——	8	III	1955	R.A. Morse	at light	FSCA
4	Columbia	O'Leno S.P.	10	V	1981	M.C. Thomas		MCTC
5	Dade	Camp Mahachee	—	—	——	Thomas & Parker	u.v. light trap	MCTC
5	Dade	Camp Mahachee	27	IV	1983	Thomas & Parker	u.v. light trap	MCTC
8	Dade	Camp Mahachee	12	IV	1983	Thomas & Parker	u.v. light trap	MCTC
2	Dade	Camp Mahachee	27	V	1983	Thomas & Parker	u.v. light trap	MCTC
3	Dade	Camp Mahachee	5	V	1983	Thomas & Parker	u.v. light trap	MCTC
2	Dade	Camp Mahachee	20	V	1983	Thomas & Parker	u.v. light trap	MCTC
22	Dade	Camp Mahachee	27	V	1983	Thomas & Parker	u.v. light trap	MCTC
24	Dade	Camp Mahachee	1	VI	1983	Thomas & Parker	u.v. light trap	MCTC
24	Dade	Camp Mahachee	19	VI	1983	Thomas & Parker	u.v. light trap	MCTC
12	Dade	Camp Mahachee	19	VIII	1983	Thomas & Parker	u.v. light trap	MCTC
17	Dade	Camp Mahachee	23	VIII	1983	Thomas & Parker	u.v. light trap	MCTC
8	Dade	Camp Mahachee	9	IX	1983	Thomas & Parker	u.v. light trap	MCTC
8	Dade	Camp Mahachee	14	IX	1983	Thomas & Parker	u.v. light trap	MCTC
5	Dade	Castellow Ham.	17	IV	1972	R.M. Baranowski	u.v. light trap	FSCA
1	Dade	Homestead	19	XII	1954	D.D. Wolfenbarger	u.v. light trap	FSCA
1	Dade	Homestead	30	XII	1954	D.D. Wolfenbarger	u.v. light trap	FSCA
1	Dade	Miami	8	VIII	1964	P.E. Briggs	u.v. light trap	FSCA
13	Dixie	3.5mi. N. Old Town	13	I	1980	M.C. Thomas		FSCA
1	Dixie	3.5mi. N. Old Town	31	V	1979	Woodruff & Fregoso	u.v. light trap	FSCA
1	Duval	Jacksonville	18-24	IV	1959	D.W. Ribble	at light	FSCA
1	Hernando	Brooksville	24	I	1940	——		CASC
9	Highlands	Highlands Ham. S.P.	20	IV	1983	M.C. Thomas		FSCA
2	Highlands	Highlands Ham. S.P.	18	IV	1983	M.C. Thomas		FSCA
2	Highlands	Highlands Ham. S.P.	4	VII	1979	Thomas & Frank	u.v. light trap	MCTC
1	Indian River	Delo area	9	VI	1964	W.L. Bidlingmayer	truck trap	FSCA
20	Levy	Manatee Springs S.P	22	V	1983	M.C. Thomas		MCTC
7	Liberty	Torreya S.P.	8	V	1980	M.C. Thomas		FSCA
1	Marion	Ocala	9	I	1979	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	18	V	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	22	VI	1977	M.C. Thomas	u.v. light trap	FSCA
1	Marion	Ocala	29	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	25	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	4	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	11	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	11	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	29	IX	1977	M.C. Thomas	u.v. light trap	FSCA

Laemophloeus megacephalus Grouvelle continued

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
2	Marion	Ocala	15	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	24	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	7	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	24	XI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	28	XII	1978	M.C. Thomas	Quercus sp. log	MCTC
8	Marion	Ocala	18	XII	1978	M.C. Thomas	Quercus sp. log	MCTC
1	Marion	Ocala	14	XII	1977	M.C. Thomas	u.v. light trap	MCTC
4	Marion	Ocala	28	XII	1978	M.C. Thomas	Quercus sp. log	MCTC
1	Orange	Apopka	13	IV	1980	B. Saunders		FSCA

Laemophloeus fasciatus Haldeman

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	Gainesville	22	III	1979	M.C. Thomas	u.v. light trap	FSCA
1	Alachua	Gainesville	20	III	1979	M.C. Thomas	u.v. light trap	FSCA
1	Alachua	Gainesville	14	XII	1983	M.C. Thomas		FSCA
1	Alachua	———	22	IV	1955	R.A. Morse		FSCA
1	Dade	Miami	2	IV	1961	P.E. Briggs	u.v. light trap	FSCA
1	Highlands	Highlands Ham. S.P.	8	VII	1975	Thomas & Frank	u.v. light trap	MCTC
1	Indian River	SR 512 .5mi W I-95	15-20	V	1978	W.L. Bidlingmayer	suction trap	MCTC
1	Indian River	S. of Vero Beach	23	X	1975	J.H. Frank	u.v. light trap	MCTC
1	Marion	Ocala	28	XII	1978	M.C. Thomas	Quercus sp. log	MCTC
1	Marion	Ocala	18	XII	1978	M.C. Thomas	Quercus sp. log	MCTC
1	Okaloosa	4.5mi N Holt, Blackwater R.S.F.	15-18	VI	1978	L. Stange		FSCA
2	Sarasota	Englewood	11	III	1975	M.M. Deanie		FSCA
1	Suwannee	Suwannee River Rt. 2	8	VII	1981	P.M. Choate Jr.		FSCA

Laemophloeus lecontei Grouvelle

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
3	Dade	Camp Mahachee	27	V	1983	Thomas & Parker	u.v. light trap	MCTC
1	Dade	Camp Mahachee	1	VI	1983	Thomas & Parker	u.v. light trap	MCTC
1	Dade	Camp Mahachee	27	V	1983	Thomas & Parker	u.v. light trap	MCTC
9	Dade	Matheson Ham.	25	V	1975	M.C. Thomas	gumbo limbo log	MCTC
1	Monroe	Key Largo	15	V	1977	R. Turnbow	u.v. light trap	RHTC
1	Monroe	Upper Key Largo	31	III	1976	M.C. Thomas	u.v. light trap	MCTC
10	Monroe	Upper Key Largo	3	IV	1976	Thomas & Frank	gumbo-limbo log	MCTC
3	Monroe	Upper Key Largo	8	V	1973	T.H. Neel	u.v. light trap	FSCA
2	Monroe	Upper Key Largo	14	V	1977	Thomas & Frank	u.v. light trap	MCTC
3	Monroe	Upper Key Largo	30	V	1978	Thomas & Frank	u.v. light trap	MCTC
1	Monroe	Upper Key Largo	3	VI	1976	M.C. Thomas	u.v. light trap	MCTC
1	Monroe	Upper Key Largo	23	VII	1978	M.C. Thomas	u.v. light trap	MCTC

Charaphloeus adustus (LeConte)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	Gainesville	4	III	1979	M.C. Thomas	u.v. light trap	MCTC
1	Alachua	Gainesville	21	II	1981	M.C. Thomas		MCTC

Charaphloeus bituberculatus (Reitter)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Monroe	Stock Island	22	V	1963	F.A. Buchanan	u.v. light trap	MCTC
2	Monroe	Plantation Key	9	IV	1969	F.W. Mead	u.v. light trap	MCTC
8	Monroe	Plantation Key	9	IV	1968	F.W. Mead	u.v. light trap	FSCA
1	Monroe	Plantation Key	1	I	1967	H.V. Weems Jr.	u.v. light trap	FSCA
1	Monroe	Stock Island	22	V	1963	F.A. Buchanan	u.v. light trap	FSCA

Placonotus modestus (Say)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	Gainesville	10	IV	1983	E.M. Collins Jr.	u.v. light trap	FSCA
1	Alachua	Gainesville	3	IV	1939	S.B. Merrill		FSCA
2	Alachua	Gainesville	11	V	1978	M.C. Thomas	u.v. light trap	MCTC
1	Alachua	Gainesville	5	V	1979	M.C. Thomas	u.v. light trap	MCTC
1	Alachua	Gainesville	2	VI	1981	M.C. Thomas		FSCA
2	Alachua	Gainesville	14	XII	1983	M.C. Thomas		FSCA
21	Alachua	Levy Co. line SR 24	19	II	1983	M.C. Thomas	Quercus sp.	FSCA
1	Alachua	San Felasco Ham.	4	II	1983	M.C. Thomas		FSCA
5	Alachua	San Felasco Ham.	1	II	1981	M.C. Thomas		FSCA
1	Alachua	San Felasco Ham.	14	III	1982	M.C. Thomas		FSCA
3	Clay	Camp Crystal	31-III-1-IV		1982	M.C. Thomas		FSCA
5	Columbia	O'Leno S.P.	1	IV	1984	M.C. Thomas		FSCA
1	Columbia	O'Leno S.P.	10	V	1981	M.C. Thomas		FSCA
1	Dade	Camp Mahachee	5	V	1983	Thomas & Parker		MCTC
1	Dade	Camp Mahachee	27	V	1983	Thomas & Parker		MCTC
4	Dade	Castellow Ham.	17	IV	1983	Thomas & Frank		FSCA
9	Dade	Goulds	19	IV	1983	Thomas & Frank		FSCA
2	Dade	Miami Springs	14	VI	1962	R.E. Woodruff	Australian pine	FSCA
2	Dade	S. Miami, USDA	19	IV	1983	M.C. Thomas		FSCA
10	Dixie	3.5mi. N. Old Town	13	I	1980	M.C. Thomas		FSCA
35	Dixie	3.5mi. N. Old Town	21	V	1978	Woodruff & Fragoso	u.v. light trap	FSCA
7	Dixie	3.5mi. N. Old Town	24	V	1979	M.C. Thomas		MCTC
1	Dixie	3.5mi. N. Old Town	5	V	1979	M.C. Thomas		MCTC
1	Dixie	3.5mi. N. Old Town	23	VII	1978	M.C. Thomas		MCTC
1	Dixie	Pine Landing	23	VII	1978	M.C. Thomas		MCTC
19	Duval	——	7	I	1956	H.V. Weems Jr.	Quercus	FSCA
3	Indian River	S. of Vero Beach	1	I	1978	M.C. Thomas	Quercus sp. log	MCTC
2	Marion	Ocala	25	III	1979	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	19	V	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	20	VI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	22	VI	1977	M.C. Thomas	u.v. light trap	MCTC
5	Marion	Ocala	21	VII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	9	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
4	Marion	Ocala	25	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
4	Marion	Ocala	12	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
5	Marion	Ocala	14	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
2	Marion	Ocala	4	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	9	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
5	Marion	Ocala	28	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
2	Marion	Ocala	9	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	11	IX	1977	M.C. Thomas	m.v. light trap	MCTC
1	Marion	Ocala	18	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	25	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	13	IX	1977	M.C. Thomas	u.v. light trap	MCTC
2	Marion	Ocala	24	IX	1977	M.C. Thomas	u.v. light trap	MCTC
3	Marion	Ocala	11	IX	1977	M.C. Thomas	u.v. light trap	MCTC
4	Marion	Ocala	15	X	1977	M.C. Thomas		MCTC
9	Marion	Ocala	11	XI	1977	M.C. Thomas	Quercus sp. log	MCTC

Placonotus modestus (Say) continued

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Marion	Ocala	21	XI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	21	XI	1977	M.C. Thomas	u.v. light trap	MCTC
9	Marion	Ocala	21	XI	1977	M.C. Thomas	u.v. light trap	MCTC
3	Marion	Ocala	11	XII	1978	M.C. Thomas	Quercus sp. log	MCTC
3	Marion	Ocala	10	XII	1979	M.C. Thomas	Quercus sp. log	MCTC
1	Marion	Ocala	9	XII	1978	M.C. Thomas	Quercus sp. log	MCTC
2	Marion	Ocala	9	XII	1978	M.C. Thomas	Quercus sp. log	MCTC
3	Marion	Ocala	18	XII	1978	M.C. Thomas	Quercus sp. log	MCTC
1	Marion	V. of Rainbow Sprgs	23-24	I	1982	M.C. Thomas		FSCA
59	Marion	V. of Rainbow Sprgs	14	II	1982	M.C. Thomas		FSCA
5	Marion	V. of Rainbow Sprgs	9	V	1982	M.C. Thomas		FSCA
3	Marion	V. of Rainbow Sprgs	5	V	1982	M.C. Thomas		MCTC
9	Marion	V. of Rainbow Sprgs	31	V	1982	M.C. Thomas		FSCA
17	Marion	V. of Rainbow Sprgs	1	V	1982	M.C. Thomas		FSCA
1	Marion	V. of Rainbow Sprgs	20	VII	1983	M.C. Thomas		MCTC
4	Marion	V. of Rainbow Sprgs	20	VIII	1983	M.C. Thomas		MCTC
11	Marion	V. of Rainbow Sprgs	24	XII	1983	M.C. Thomas		MCTC
4	Putnam	Lake Como	22	X	1977	M.C. Thomas		MCTC
2	St. Lucie	Indrio	19	I	1984	K. Hibbard	hickory	FSCA
1	Taylor	Blue Sprgs Lake	6	VI	1972	H. Turnbow	u.v. light trap	HHTC
2	Volusia	Enterprise	20	4	——	——		CASC
1	Volusia	Ormond Bch.	—	—	——	——		CASC

Placonotus politissimus (Wollaston)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Dade	Camp Mahachee	27	IV	1983	Thomas & Parker	u.v. light trap	MCTC
1	Dade	Camp Mahachee	8	IX	1983	Thomas & Parker	u.v. light trap	MCTC
1	Dade	Camp Mahachee	27	V	1983	Thomas & Parker	u.v. light trap	MCTC
3	Dade	Goulds	18	IV	1983	Thomas & Frank		FSCA
1	Dade	Homestead	9	XII	1954	D.D. Wolfenbarger	u.v. light trap	FSCA
1	Dade	Matheson Ham.	14	VI	1975	Thomas & Frank	u.v. light trap	MCTC
3	Dade	S. Miami, USDA	17	II	1977	R. Clark	u.v. light trap	FSCA
1	Dade	Redlands Park	28	I	1978	R. Clark	u.v. light trap	FSCA
2	Highlands	Archbold Biol. Sta.	2-5	IV	1979	L.L. Lampert	u.v. light trap	FSCA
1	Highlands	Highlands Ham. S.P.	4	VII	1975	Thomas & Frank	u.v. light trap	MCTC
1	Indian River	Fellsmere	4	IX	1975	M.C. Thomas	at light	MCTC
1	Indian River	S. of Vero Beach	28	VIII	1975	J.H. Frank	u.v. light trap	MCTC
1	Indian River	Vero Beach	7	I	1976	M.C. Thomas	at light	MCTC
9	Marion	Ocala	25	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	26	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	12	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	14	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
2	Marion	Ocala	19	IX	1977	M.C. Thomas	u.v. light trap	MCTC
2	Marion	Ocala	13	IX	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	9	XI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	21	XI	1977	M.C. Thomas	u.v. light trap	MCTC
2	Marion	V. of Rainbow Sprgs	31	V	1982	M.C. Thomas		MCTC
2	Marion	V. of Rainbow Sprgs	5	V	1982	M.C. Thomas		MCTC
3	Monroe	Stock Island	3	IV	1963	F.A. Buchanan	u.v. light trap	FSCA
4	Monroe	Stock Island	19	IV	1962	F.A. Buchanan	u.v. light trap	FSCA
2	Monroe	Stock Island	25	IV	1963	F.A. Buchanan	u.v. light trap	FSCA
1	Monroe	Stock Island	23	IX	1962	F.A. Buchanan	u.v. light trap	FSCA
1	Monroe	Upper Key Largo	3	IV	1976	Thomas & Frank	u.v. light trap	MCTC
1	Polk	Winter Haven	5	VIII	1960	J. Hayward	u.v. light trap	FSCA

Placonotus zimmermanni (LeConte)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	San Felasco Ham.	30	I	1983	M.C. Thomas		FSCA
1	Alachua	San Felasco Ham.	8	II	1983	M.C. Thomas		FSCA
6	Alachua	San Felasco Ham.	4	II	1983	M.C. Thomas		FSCA
8	Alachua	——	26	I	1958	M.V. Weems Jr.	Quercus	FSCA
1	Clay	Camp Crystal	31-III-1-IV		1982	M.C. Thomas		MCTC
1	Dixie	3.5mi. N. Old Town	8	IV	1980	M.C. Thomas		FSCA
3	Dixie	3.5mi. N. Old Town	13	I	1980	M.C. Thomas		FSCA
1	Duval	——	7	I	1956	M.V. Weems Jr.	Quercus	FSCA
1	Marion	Ocala	28	XII	1979	M.C. Thomas	Quercus sp. log	MCTC
1	Marion	Ocala	18	XII	1978	M.C. Thomas		MCTC
2	Marion	Ocala	11	XII	1978	M.C. Thomas	Quercus sp. log	MCTC
1	Marion	Ocala	13	IX	1977	M.C. Thomas	u.v. light trap	MCTC

Parandrita permixtus (Grouvelle)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
2	Dade	Camp Mahachee	12	V	1983	Thomas & Parker	u.v. light trap	MCTC
1	Dade	Camp Mahachee	14	IX	1983	Thomas & Parker	u.v. light trap	MCTC
1	Monroe	Stock Is.	25	IV	1963	F.A. Buchanan	u.v. light trap	FSCA
1	Monroe	Stock Is.	3	VI	1964	F.A. Buchanan	u.v. light trap	FSCA

Phloeolaemus chamaeropis (Schwarz)

No.	County	Locality	Day/Month/Year			Collector	Data	Coll.
1	Alachua	Archer	6	VI	1982	M.C. Thomas	dead Quercus sp.	MCTC
2	Alachua	Gainesville	2	X	1983	M.C. Thomas		FSCA
4	Alachua	Gainesville	2	I	1984	M.C. Thomas		FSCA
1	Alachua	Gainesville	25	V	1980	M.C. Thomas		FSCA
1	Alachua	Gainesville	13	V	1958	R.E. Woodruff	u.v. light trap	FSCA
1	Columbia	O'Leno S.P.	1	IV	1984	M.C. Thomas		MCTC
1	Dixie	2mi. N. Old Town	13	I	1980	M.C. Thomas		FSCA
1	Dixie	3.5mi. N. Old Town	6	V	1978	M.C. Thomas		MCTC
1	Dixie	3.5mi. N. Old Town	24	V	1978	M.C. Thomas		MCTC
4	Dixie	3.5mi. N. Old Town	3	V	1979	M.C. Thomas		MCTC
1	Dixie	5 mi. W. Shamrock	9	VI	1980	M.C. Thomas		FSCA
2	Highlands	Highlands Ham. S.P.	18	IV	1983	M.C. Thomas		FSCA
1	Marion	Ocala	10	XII	1978	M.C. Thomas	Quercus sp. log	MCTC
1	Marion	Ocala	26	VIII	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	28	VI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	8	XI	1977	M.C. Thomas	u.v. light trap	MCTC
1	Marion	Ocala	11	XII	1978	M.C. Thomas		MCTC
1	Marion	V. of Rainbow Sprgs	5	V	1982	M.C. Thomas	u.v. light trap	MCTC

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(Note: References are cited basically as recommended in "Style manual for biological journals" (AIBS, 1964), with the following exceptions: "Ent." is used rather than "Entomol.", a usage condoned by custom for more than a century (Woodruff 1973:182), and geographical names are spelled out. I have seen all references except those marked with an asterisk; citations for those references were obtained from other bibiliographies.)

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BIOGRAPHICAL SKETCH

Michael Charles Thomas was born is 1948 in Miami, Fla. to Mr. and Mrs. C.E. Thomas. He spent his childhood and youth in Miami, except for a year spent on the island of Guam. He graduated from Southwest Senior High School in 1966, fully intending on pursuing an education in entomology, an interest that had begun at about the age of 11.

However, at some point during his two years at Miami-Dade Community College he switched majors to Fine Arts. After graduating from Miami-Dade in 1968 he went on to the University of South Florida, majoring in Fine Arts and concentrating on intaglio printmaking. He graduated in December 1970 and married Sheila McCuiston a week later.

The couple moved to Punta Gorda, where Sheila had obtained a teaching position, and soon Mike had become a newspaper reporter with the Punta Gorda *Daily Herald-News*. A year and a half later, he obtained a job with the Orlando *Sentinel-Star* and moved to Melbourne and later to Vero Beach, where he served as bureau chief, and finally to Ocala. During the five years he spent with the *Sentinel-Star* he won the newspaper's best newswriting award for a story about a Vero Beach man who was electrocuted. It was also during this time that the couple's two daughters, Andrea

Lynn and Erin Juanita, were born, and Mike's interest in entomology was rekindled. The two events were not necessarily related.

In 1977 he got a job with the University of Florida's Division of Information Services as an Information Specialist, later being promoted to Research Editor. At the same time he began his graduate education in entomology, receiving his M.S. in 1981, writing his thesis on "A revision of the New World species of Placonotus Macleay (Coleoptera:Cucujidae)." In 1983, finding doctoral level classes, research and a fulltime job in the Division of Information Services, he resigned from the Division and took a position as a parttime teaching assistant in the Department of Entomology and Nematology, teaching laboratories in general entomology, physiology and morphology, insect identification, and immature insects. During this time he has authored or co-authored 16 scientific papers. Sheila returned to teaching to provide the necessary financial support. He expects to receive his Ph.D. in August 1985.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Robert E. Woodruff

Robert E. Woodruff, Chairman
Professor of Entomology and
Nematology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

J.H. Frank

J.H. Frank
Associate Professor of Entomology
and Nematology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Dale H Habeck

Dale H. Habeck
Professor of Entomology and
Nematology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Reece I Sailer

R. I. Sailer
Graduate Research Professor of
Entomology and Nematology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Jonathan Reiskind
Associate Professor of Zoology

This dissertation was submitted to the Graduate Faculty of the College of Agriculture and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philiosophy.

August 1985

Jack L. Fry
Dean, College of Agriculture

Dean, Graduate School

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